The Builder.

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The London Water Question.

AT the meeting of the London County Council held on Tuesday last, the recommendations of the Water Committee that Bills should be promoted in the 1900 Session of Parliament for the purchase by the Council of the undertakings of the eight metropolitan water companies, and also to enable the Council to obtain an additional supply of water from Wales, were adopted. We will not now discuss the purchase question, but there are certain statements in the Report of the Committee that may profitably be traversed.

One of the conclusions arrived at is that the ultimate supply for the Metropolis can only be assured by resorting to sources other than the valleys of the Thames and the Lea. These conclusions are based on the supposition that the water yielded by these two rivers in insufficient for the supply of the Metropolis; there are no observations as to the quality of the water. Accordingly, the Council are about to reintroduce their Welsh scheme to the notice of the Government. In dealing with the Thames, it is stated that at Molesey weir, which is situated immediately below the intakes of the water companies, there is no system of measurement, but actual observation has shown that during almost the whole of August no water (except that passing through the locks) flowed visibly past this spot. In other words, it would seem that during the month the companies intercepted practically the whole volume of the river. The Committee remarks that the state of things which for years has obtained in the Lea has, at last, arisen in the Thames, and that the latter river cannot be depended upon for the ultimate supply of London is fully borne out by the facts of the present year. "Moreover, recent observations seem to throw considerable doubt as to how far the figures representing the flow at Teddington, upon which all former calculations have been based, afford an accurate criterion of the amount of purely upland water which comes down the Thames."

Now all that is very interesting, but it seems to ignore several important facts as to the immediate effect of the storage of surplus water. It is said that in the present year the total average daily flow in August has dropped to 229,300,000 gallons, from which the water companies have drawn as much as 148,500,000 gallons. Thus the actual daily flow over Teddington weir for that month was, on the average, only 80,800,000 gallons. The Balfour Commission considered that it is expedient that at least 200,000,000 gallons per day should be left at all times to flow over that weir. Consequently, the Council has, on the surface, made a point in the way of argument; for if the recommendations of that Commission were enforced, the companies would only have had some 30,000,000 gallons per day for their purposes, and that means a serious water famine.

The Council does not seem to see, however, that that recommendation of the Balfour Commission runs *pari passu* with another which distinctly contemplates the construction of adequate storage reservoirs in the Thames valley at no great distance above the intakes of the companies. The conclusion that the Commission arrived at was that with this provision it would be possible to obtain an average daily supply of no less than 300,000,000 gallons without taking in any objectionable part of the flood water. That does not seem to correspond with the observations of the Water Committee of the County Council, for the simple reason that the committee has taken a limited portion of the year—those months in which the river is usually at its lowest—instead of considering the flow for the whole year. We hold no brief for the River Thames, much less for the water companies, but to our mind the recommendations of the Committee would certainly have more weight, and be of much greater value, if the Report were to bear the impress of a scientific document rather than that of a special brief.

It should not be forgotten that the Royal Commission, after considerable pains, found that, taking the year through, the average daily flow of the Thames at Teddington weir, adding the water taken by the companies, was about 1,350,000,000 of gallons per day. With this as a basis, it will be seen that when 300,000,000 of gallons are taken, there would be left to flow down into the tidal portion of the river an average daily quantity of not less than 1,000,000,000 gallons. The Commissioners thought that regulations could be framed under which the quantity they suggested could be taken, not only without reducing the flow of the river on the rare occasions of exceptional drought, but in such a way as to secure that the volume of water left in the river at these times would be substantially greater than it is under existing conditions. The storage reservoirs scheme possesses the advantage that it can be carried out progressively to meet the increasing demands for water.

It is interesting to contrast these conclusions with those of the County Council. The latter body state that the River Thames cannot be depended upon in a very dry year to yield the amount of water upon which the companies have based their scheme of supplying the Metropolis by means of storage reservoirs at Staines. Now, how can the County Council know what the water companies intend to do in the future? If the storage at Staines is not adequate enough to cope with exceptional drought, is it beyond the powers of the water companies to extend that storage, exactly as recommended by the Royal Commission? The Water Committee cannot be in ignorance of the last-mentioned recommendation, then why not mention it in their Report? They themselves have, at least, adopted the principle of gradual extension of storage as requirements need, in regard to their Welsh scheme. Why deny the application of the same principle in regard to the Thames? Has it never struck the Water Committee that by the time adequate storage has been provided

it will not be impossible to permit the 200,000,000 gallons per day to flow over Teddington weir? Even with the droughts of the last two years, the like of which have never been known in the history of the researches as to the flow of the Thames, the water companies could still, in the driest months, permit the 200,000,000 gallons to flow over the weir, and then have a considerable quantity of water at their disposal. If we take the month of August last, already quoted, we shall see that about 30.000,000 gallons per day would yet be available. True, that is not a great deal as compared with the 150,000,000 gallons the companies want per day at that time of the year, but it is something. And, if we consider the "natural flow" of other dry months of this year we shall find that the quantity available after sending the 200,000,000 gallons over the weir is considerably more than in the August quoted. Thus in September last the natural daily flow was 272,300,000 gallons, July 298,100,000 gallons, and June 368,700,000 gallons. In June, therefore, the companies, allowing the 200,000,000 gallons as before, could have taken all they required (131,800,000 gallons) and could have stored up as much as about 37,000,000 gallons per day additional. But it must be remembered that we are dealing with figures referring to exceptional periods of drought. The average natural daily flow taken over a period of sixteen years prior to 1899 was—June 682,800,000 gallons, July 547,400,000 gallons, August 488,000,000 gallons, and September 505,000,000 gallons. These figures are given by the County Council, and, consequently, the Council must be well aware of them. It will be seen at a glance that if we permitted the average of a number of years to guide us in the question there could be no necessity for any sort of storage whatever. But we cannot do that, and the storage now about to be effected at Staines is to provide not for ordinary years but for exceptional ones.

We can understand some little misgivings on the part of the public as to the quality of Thames water, but as to the adequacy of the quantity we have never had any doubt. Many years ago we advocated storage, even when that seemed unnecessary so far as the quantity available was concerned. We advocated it then because we felt that some sort of compensation should be provided by the companies for the privilege of their being allowed to take the water, and the storage would restore the equilibrium of the river to some extent in the summer time. And we shall still advocate the same policy. Although the Balfour Commission allude to 200,000,000 gallons as being enough (as a minimum) to be permitted to flow over the weir we would rather see that quantity increased, and it could easily be done by storage. It is a maxim in water engineering that the early portion of a flood should be allowed to escape, on account of the sediment it invariably contains. There can be no reason, however, why even such water as that should not be stored for compensation or equilibrium purposes. With such an enormous margin to spare, however, especially in the rainy months, it is doubtful whether the companies would care to confine the flood water, on account of the expense attending the clearing out of the sediment from time to time. They would assuredly wait for the flood to roll by, and take in the purer water, even for compensation purposes, if only on the ground of economy in expenditure.

As previously mentioned, the Report does not extend to the quality of the water this time. Yet, as we all know, the Council are having frequent tests made. The other day, on the recommendation of the Water Committee, the Council's chemist was authorised to continue the analyses of the water of the Thames and Lea above the companies' intakes, and of the water drawn from the companies' mains, for a further period of three months. We are unable to understand this action on the part of the County Council, seeing that the water is now, and has for many years been, most carefully examined, both chemically and bacteriologically, under Government auspices. Their only object for doing so appears to be one which one does not like to contemplate. In every school of science there are differences as to how certain scientific examinations are to be brought about, and, knowing the views of the friendly disputants, which are perfectly *bonâ-fide*, and have one common basis—the increase of knowledge—it is quite possible to bring the officials in science into conflict with one another. The public is hardly able to appreciate the differences in the interpretations of the officials, and certainly cannot appraise them at their true value.

The Water Committee naïvely remarked on the occasion in question that they thought that in any case it might be well if the Local Government Board could be induced to extend their investigations, so that at any rate the analyses might be more comparable with those made on behalf of the Council. It seemed to them that analyses made of samples drawn from the companies' mains once a month or even once a week could not assure a sufficient estimate of the quality of the supply, and that the only way to ensure a high state of purity in the water supplied to London was by securing daily examination of the water as delivered to the consumer. We think the last recommendation goes rather too far, but, at any rate, it is in the right direction. But it will not be easy for the Council to get the Local Government Board to level itself up to their standard in regard to methods of interpretation of analyses. Ought it not rather to be the other way about?

In dealing with the question of quality we must remember that, in a sense, that is one of degree. No one likes the "previous history" of London's present supply from the Thames; the point, however, is, are we quite sure that the quality of the suggested supply is any better? The Thames is undoubtedly polluted at several localities, in spite of the vigilance (or shall we say the want of it?) of the Conservators. It is not pleasant to reflect on this circumstance, but we have the consolation of knowing that the effects of organic contamination are largely neutralised as the water nears the point of the intakes, and the process still further proceeds during filtration before the water reaches the consumer. The principal source of contamination is cultivated land which has frequently to be manured. No doubt, considerable precaution is taken to minimise this evil; but, all the same, it exists. And where does it not exist within a measurable distance of London? Do we escape it by going to that part of Wales recommended by the London County Council? If we do not, then what is the object of going to Wales? Any one who has recently been over the district with the map furnished by the Council through their engineer will not have much difficulty in answering these questions. The aim of the engineer has been to avoid cultivated land (chiefly in the valleys) as far as possible, and rightly so. But it is not entirely avoided. And we have to be careful in gaining a particular object that another and more important one does not overshadow it.

Can we be quite sure that, all round, the quality of the water proposed to be captured in Wales is even as good as the water at present supplied to the metropolis? Mark what Dr. G. S. Buchanan and Mr. R. H. Bicknell, Inspectors to the Local Government Board, say in reference to the gathering grounds of the water supplied to Bolton—a Report issued only the other day:—"It appeared from memoranda furnished to the Board by Dr. Houston after a visit to the Bolton gathering grounds in 1896, that water obtained from Dingle gathering ground, which is a peaty moorland, acted decidedly upon lead." Dr. Houston pointed out that acidity and plumbo-solvent ability might have been expected in view of the exceptionally peaty character of the soil of the gathering ground, and the numerous points thereon where rain can stagnate in peaty and mossy beds, and in marshy places. The inspectors took seven samples of the water on the occasion of their visit from different sources of supply to the reservoir. Of these, Dr. Houston found that three were more or less acid and possessed lead dissolving properties, whilst four were neutral. In regard to the whole supply to Bolton, the inspectors found that, on the question of lead-dissolving ability, the supply to the Dingle reservoir was the only delinquent. They remark that the ordinary sand filtration process will, in general, suffice to deprive that water of its lead dissolving properties.

Experience extending over many years in regard to the filtration of water, however, does not seem to quite bear out the views of these inspectors when really peaty water is to be dealt with. No doubt, under the existing circumstances of the Bolton supply, good filtration must have a beneficial effect, but speaking of the extremely minute spores of peat moss, it may be taken as granted that they cannot be entirely removed, and the supply from peaty land must always be more or less contaminated with peat spores accordingly.

The upper portions of the valleys of the several streams from which the Council propose to get the water from Wales are not much under cultivation. The country is partly bleak and partly wooded, but peat patches are not uncommon. Most of the streams bear direct evidence of having been derived from land bearing peat moss. The water is soft, extremely so, and the solvent action of such soft water alone on the newly-cut surfaces of lead pipes is a factor not to be ignored when dealing with an improvement on the present sources of supply.

It is of very little use to point to Liverpool, Manchester, Birmingham, &c., as examples of great cities which have gone some distance for their supply. They were compelled to do so because of the inadequacy of the supplies nearer home. In their case water

famine stared them in the face; but, as we have seen, we are not placed in such an awkward position in London, in spite of the outcries made from time to time. A water famine in the East End, created by withholding facilities from the water company responsible for the supply of the district, can hardly be called a test case as to the question of quantity.

We notice that the County Council is very careful about their Welsh scheme. They do not supply particulars in the same detailed manner with reference to the streams proposed to be captured, as they supply in regard to the Thames and Lea. They know perfectly well that the best parts of the eastern watersheds of the Welsh hills are already captured by Liverpool and Birmingham, and in a lesser degree by Swansea.

Assuming, however, that the quality of the water from the Welsh hills alluded to were unimpeachable, there is still the question of the quantity to be disposed of. The Council is not very explicit in regard to this. During the recent drought, the principal stream relied upon has not been conspicuous as to quantity. They are doubtless acquainted with that fact, but they do not mention it in the Report. It would be interesting to know if careful measurements of the different streams have been made during the past two or three months, because rainfall is a very doubtful criterion to fall back upon in certain districts. Liverpool made its arrangements in North Wales, having regard to the extremely indurated nature of the rocks within the watersheds and on the site of the great reservoir. Birmingham is doing something on the same lines, though the experiment of filling the reservoir has yet to be made. But in the case of the County Council's proposals to take water from the upper portions of the Wye, Usk, and Towy, there are more porous rocks to be considered, as we have mentioned on previous occasions. The Old Red Sandstone is not remarkable for its porosity when indurated, but over a large area of the watersheds of the streams proposed to be captured it is not much indurated, and joints are frequent, though it cannot be considered as a water-bearing bed. To make large reservoirs on this material that shall not leak will be a most expensive operation.

In our opinion this Welsh scheme has not been studied enough. Casual visits to the district are not of much use where enormous storage is the only factor to be relied upon. Streams seen to be only a few feet in width and a few inches in depth, and not moving very rapidly, in the summer or autumn, only give a very partial idea of their capacity from a water-supply point of view. They must be observed all the year round and for several years. We have yet to learn that the County Council have bestowed that attention to these streams that the circumstances seem to warrant. Several water enterprises, it is true, have been undertaken merely on the strength of rainfall, but none of them have been of the magnitude of this Welsh scheme, and several have fallen short, in regard to quantity, of the expectations of the engineers who have designed them. It is most difficult to allow for the absorption of porous beds within the water-shed unless some accurate idea is first obtained as to the capacity of streams therein over a long period.

In conclusion, whilst we do not advocate any special policy in regard to the question as to who shall ultimately be the Water Authority of the metropolis, we recognise that when that Authority is constituted it will have to look the whole facts in the face, and not a limited number of them only. Our view is that such an Authority would, if the Thames really did prove to be inadequate after storage, first look to the large body of water in the chalk as an auxiliary supply, rather than bring lead-dissolving water from Wales. In this connexion, it is interesting to note that the chalk of Berkshire, not far from the reservoirs at Staines, is, as yet, but little drawn upon, though it contains a large supply of excellent water.

NOTES.

Provincial Theatre Fires. It is not often that we hear of such a series of theatre fires near London as the sequence we have been having during the last ten days at St. Helen's, at Cardiff, and at Sheffield, where, in each case, buildings of recent construction have practically been gutted. It has been the good fortune of this country not to have any serious loss of life at theatres since the terrible tragedy at Exeter; but it speaks very badly for modern speculative theatre work that the damage done in an outbreak should in every case be so extensive. In many provincial centres we are glad to say that the London County Council requirements are at last taken as a minimum of what is necessary for a new theatre, and we hence find more exits and better staircase accommodation in certain localities than was formerly the case. But we are afraid that there are also many localities where the protective measures are left entirely at the discretion of some subordinate official, who advises the magistrates or the local authorities as much by his likes or his dislikes as by any question of precedent or practical experience. It is time that there should be an end to this indiscriminate way of attending to a question of such importance as theatre safety, and it would be by no means premature if some model by-laws were framed as to the requirements of the provincial playhouse, just as model by-laws are framed regarding other matters of public safety. Theatre fires seem to be on the increase, and considering that where the local regulations are not sufficiently stringent the safety of the public is practically in the hands of the architect, we fear that we shall one of these days find a speculative theatre architect before the coroner's jury under similar cimcumstances as in the case at Exeter, but with the material difference that public opinion will be stronger against the delinquent now than was the case twelve years ago.

Unhealthy Areas and Municipal Re-housing. We have received from Mr. Blashill, the late Architect of the London County Council, a print of a valuable paper which he read at the Sanitary Congress, on Unhealthy Areas and Municipal Re-housing. No one has a better right to speak with authority on this subject than Mr. Blashill, and we hope that this paper will be widely read and carefully considered. It appears to show that the present action of the Housing of the Working Classes Act, 1890, is unsatisfactory: it causes a great expenditure of public money with inadequate results. "We want," says the author, "an Act which will destroy only the slums, which will leave to every owner the true value of his interest, which will actually re-house or re-settle every person displaced who is capable of being so dealt with, and will not be an unreasonable burden upon the rates." To offer some suggestions towards this end is the object of this paper. We are convinced, however, that, as we have often pointed out, some official investigation of the working of the Act in question is required. We are not greatly in favour of Royal Commissions, but sometimes they are necessary. But there is one point which becomes the more noticeable the more this subject is considered. If the Public Health Act is properly carried out, why should there be slums at all? The very object of sanitary inspectors is to see that the ordinary rules of health are adhered to. What is needed above everything at the present time is to prevent the growth of unhealthy areas. Their removal may be necessary, but the cheapest and the most satisfactory line of public conduct is their prevention.

Institution of Civil Engineers. Sir Douglas Fox's eminently practical address at the opening meeting of the Institution of Civil Engineers on Tuesday was largely occupied with questions of railway construction and economy of transit. He deprecated, and with reason, the backwardness of England in regard to the adoption of electrical motive power, both in respect to tram cars and the Metropolitan Railway, in regard to which latter he drew a picture of the delights the Underground traffic would present with cleaned and whitened tunnels and electrical trains, able to start and stop quickly without shock. This will come in time, no doubt, and allowance must be made for the difficulty of so large an undertaking as changing the whole plant and working system of a railway, even with the flattering prospect of increased earnings as the ultimate result. Referring to the increase in the first cost of railways, Sir Douglas Fox made the rather questionable suggestions that economy would result from omitting fencing except where absolutely necessary, substituting, in some situations, level crossings without lodges or gates for bridges, and doing away, under similar circumstances, with raised platforms and complicated signalling: all which suggestions appear to us to be of a most undesirable nature. The question of the establishment of standard specifications for works in such materials as steel and cement, which is likely to become for the present more and more prominent, was touched upon with approval, but with the proviso that care must be taken not to stereotype the details of design so far as to throw difficulties in the way of improvements. That is the difficulty in the matter. To be of economic importance in regard to time and cost, standardising must be carried pretty far, and the system may turn out to present inconveniences not at present fully realised.

Pile Driving. There are many departments of engineering where the most carefully devised formulas can only be approximately applicable, and the subject of pile driving is one in which experience and judgment are of infinitely more value than mathematics. At the same time

From the Eirmingham Architectural Association Report.

formulas based on theory and corrected by ascertained results are often useful, provided the calculated safe load is in every case qualified by actual conditions at the time and place of driving. In England, various formulas have been employed, amongst which may be named those of Rankine, Weisbach, and Sanders; and in the United States the Wellington formula is very generally considered to be both simple and reliable. Some discussion has lately taken place with regard to a new formula by Mr. Haswell, M.Am.Soc.C.E., and although it is admitted that this gentleman possesses the advantage of long experience in connexion with pile-driving, we do not gather that his rule commands universal approval. The experiments of the author do not appear to indicate the absolute values of impact, and therefore do not substantiate his formula, which is limited to penetration of half-an-inch, and therefore does not apply to all the cases usually occurring in practice. Whatever be the formula employed, it should, of course, recognise the fact that the work accumulated in the falling weight is expended partly in compressing and partly in driving the pile. The effect is thereby reduced, as it also is by friction in the pile driving machine. These influences have to be taken into account, and a general factor of safety applied, before the safe load can be calculated from the weight and fall of the ram with a minimum movement of the pile. Even then, the consideration of other factors is necessary. For instance, we cannot assume any kind of soil to be of uniform value in respect of constant resistance either during or after driving. Again, there is a great difference between the behaviour of sandy soil, and of plastic muds and clays. Piles driven into the former form a cone of resistance, and penetration soon reaches a minimum of about $\frac{1}{2}$ in., but if an interval of twenty-four hours be allowed to elapse, the soil resumes its natural condition and the piles may be driven 5 in. at the first blow. On the other hand, when piles are driven into muds and clays, until at the last blow penetration is, say, 3 in. it will be found that after twenty-four hours repeated blows produce no effect. Under circumstances such as these, no formula can be of the least use. At the best, a formula is no more than a convenient expression of a test of brief duration, and totally disregards the influences of time, water, and decay. Moreover, no true relation has yet been found between the effects of sudden impact and of steady pressure, such as prevails when the piles are carrying the weight of a building Thus we find that safe loads as now calculated are not only based on empirical formulas, but that the unit of resistance assumed therein is inappropriate. Experiments are much needed for the purpose of affording comparison of results furnished by existing tests with those ascertained after the lapse of time. Until this can be done, the problems presented by pile-driving will probably remain beyond the scope of mathematical refinements.

Building Covenants.

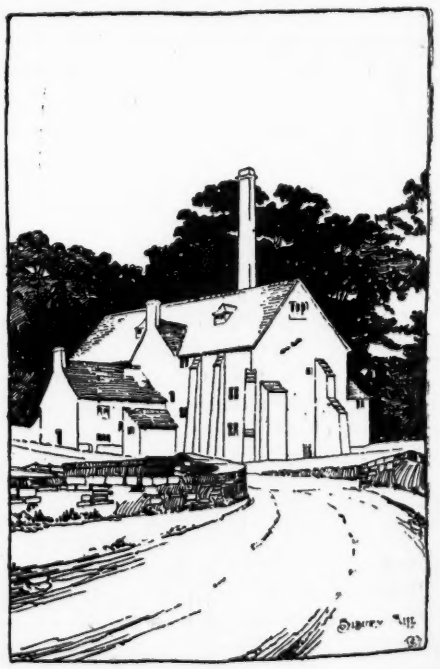
A CASE of a good deal of importance in regard to building and covenants on building estates was decided last week by Mr. Commissioner Bosanquet, who took the place of a judge on the last North-Eastern Circuit. Some land in Halifax was sold in lots for building purposes, and among the conditions of sale was one that "all buildings shall be erected in accordance with the building line shown upon the plan, and all buildings, stables, and conveniences shall be placed on the westerly side of the lot." The plaintiff bought two of the lots, and presently allowed a tenant of one of the houses erected on these lots to place a movable billiard-room on the front or east side. It was 32 ft. long by 27 wide, and 17 ft. 6 in. high, and stood 10 ft. back from the road in the 60 ft of space between it and the building line. It had also brick foundations, and had galvanised iron roof and wooden sides. Two other lots were, at a later date, purchased by the defendant, who expressed his intention of building up to the road. The plaintiff asked for an injunction to restrain this breach of the covenant, to which the defendant replied that he had no right to it, having allowed it to be broken. The billiard-room, it should be observed, had before these proceedings been removed. But the judge decided that the plaintiff had not disentitled himself to be allowed this injunction, for the principle of law is that he would have been disentitled only if the benefit of the covenant had been lost through the plaintiff's act, and such benefit was in this case not lost. We confess that it is difficult to follow the Judge throughout his whole judgment. If the billiard-room had been standing it was a practical destruction of the covenant; as it was removed it had done no harm. The villas to be erected were no worse for the fact that the room had once existed, but it is difficult not to believe that a room of this sort in front of villas would have not only been detrimental to their appearance, but a clear breach of the covenant both in fact and in intention.

Birmingham Architectural Association.

IN the Annual Report of the Birmingham Architectural Association we find the same complaint that we noticed last week in the Report of the Architectural Association of Ireland, of the want of enterprise on the part of the student members or junior members. The Council express keen disappointment at the absolute lack of competition for the studentship prize offered for the first time this year, only one set of drawings having been sent in, by Mr. J. Barclay Orwin, to whom half the amount of the prize was awarded, the examiners considering that the drawings did not merit the full award. If the competition, it is added, is not taken up in a better spirit in the coming session, the prize will have to be abandoned. We hope the student members will resolve that no such discredit should fall, through them, on the Association. We extract the following from the Report:—

"The subject of the local by-laws has been before the Council, and a Special Committee was appointed for its consideration. Correspondence has taken place with all the local district surveyors on the question of revision, with a view of obtaining a greater uniformity in the building by-laws of the city and the surrounding districts, and remedying the many inconsistencies which now exist. Unfortunately many of the local District Councils have lately obtained a revision, but, on the other hand, promises have been obtained from the City Authorities and several of the Local Councils to submit the draft of any proposed revision to this Association for the purpose of receiving their suggestions. The whole question is, however, somewhat in abeyance at the present time, pending the result of the deliberations of the Institute Committee, which was appointed to consider the subject, and awaiting the draft of the revision of the City By-laws, which had to be postponed on account of the pressure of other business. The question is one of great magnitude and difficulty, and the Council will be glad of the energetic support of the members in dealing with a question which so strongly affects the interests of the profession, either by suggestions or reports of particular instances of general application, which will aid them in dealing with the matter in a conclusive and satisfactory manner."

As usual, some small sketches made on some of the excursions are bound up with



Bibury Mill.

the Report. We reproduce two of them; one of Bibury Court (which bears the initials

of Mr. E. F. Reynolds, the Librarian to the Association), the other a pretty sketch of Bibury Mill.

Glass as a Paving Material.

SOME months ago* we called attention to the fact that glass prepared by Garchey's patented process was being recommended as a paving material. It is now reported that blocks of this material have been on trial at Lyons for several months, and have been found to wear well. The superficial area of each block is about 64 square inches, and its face is divided into sixteen squares in order to afford foothold. It is stated that very few of the slabs have been chipped by the wear and tear to which they have been exposed. Blocks of the same material, manufactured in convenient shapes and sizes, are also being produced on a large scale for general building purposes. It is, however, difficult to believe that glass will to any appreciable extent replace the materials at present employed for paving or building.

Messrs. Tooth's Exhibition.

THE winter exhibition at Messrs. Tooth & Sons' Gallery in the Haymarket is of rather exceptional interest. Among the principal works included in the collection are Leighton's "Invocation," the figure of the beautiful girl in white robes and with uplifted arms, familiar to the public through engravings; a large and fine landscape by Harpignies, "La Loire, près Sancerre," which we have formerly seen in one of the Paris Salons; a larger work than usual by Diaz (who generally painted on a small scale), "Bûcheronnes," which, however, does not exhibit his peculiar and characteristic qualities so distinctively as some others of his works; M. Bouguereau's "Elégie"; and two of the largest and most typical of Mr. Peter Graham's paintings, "Moorland Quietude," and "The Grass-Crowned Headland." Among smaller paintings is a good Corot on a small scale (No. 1) and a good Dupré (No. 2) on a still smaller scale, but showing nevertheless his usual powerful treatment of the sky. Mr. Farquharson's "A Field After Rain" and Mr. Leader's "A Surrey Upland" are among the best of the smaller things; Mr. Leader being almost always better on a small than on a large scale. Sir L. Alma-Tadema's "Baths of Caracalla" is also at present hanging in the outer room of the Gallery, though it does not make a part of the catalogued exhibition.

The Goupil Gallery.

SOME further works by the late James Maris, as well as other pictures, have been added to the Goupil Gallery collection, which may be considered to be a kind of rearrangement of the last exhibition there. Among the works of Maris "A Dutch Port" and "The Three Windmills" (3 and 5) are remarkable for the boldness and breeziness of the sky. "A September Day on the Arun" (20), by Herr José Weiss, though heavy and dingy in colour, is a fine and powerful work of its school. Perhaps the best thing in the room is however Mr. Peppercorn's comparatively small work, "The Moor" (32); a masterly piece of broad landscape effect. A collection of sketches by Mr. Ludovici, under the title "A Trip to Dordrecht," forms part of the exhibition; there is plenty of feeling for colour and atmosphere effect in these, but the artist has carried quite beyond its fair limits the ultra-modern habit of asking us to accept mere smudges of effect as pictures.

* *Builder*, April 22, 1899.

Mr. Wallace Rimington's Exhibition.

THE first of Mr. Rimington's hundred and thirty drawings exhibited at the Fine Art Society—"Borganvillia Blossom," promises well for the rest; it is a very effective mass of coloured blossoms amidst an architectural framing. But unfortunately there are few others equal to this in an artistic sense. The drawings, which illustrate scenes from the Mediterranean and the Adriatic borderlands, are a very interesting collection in a topographical sense, and a great many of them are what may be called very pretty drawings; but they do not as a rule get beyond that, and the treatment of the architecture, which comes into a good many of them, is weak. The interest lies, in fact, more in the subjects than in the execution; they are very good illustrations.

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS:

OPENING MEETING OF SESSION 1899-1900.

THE opening meeting of the new Session of this Institute was held on Monday evening, at No. 9, Conduit-street, Regent-street, W., the President, Mr. William Emerson, occupying the chair.

The late Sir Arthur Blomfield.

The minutes of the last meeting having been taken as read,

The President said that it was with the deepest regret and sorrow that he found that his first words from that chair must be to announce the decease of one of their oldest friends and members. Only the previous Monday morning he had received a kindly letter from Sir Arthur Blomfield expressing his intention of being present at their opening meeting; but that same evening suddenly—very suddenly—he passed away. Sir Arthur Blomfield was an ardent admirer of the Gothic style of architecture, and was one of the enthusiastic promoters of the revival of that style in the middle of this century. He was one of the School of Purists, and in all his buildings there was—as in his life—a strong element of self-restraint. Many of his buildings stand out from the current architecture of the day by their quiet refinement, and the total absence of affectation. He evidently felt that eccentricity was not art, and he also strove to adapt his architecture to the requirements of the day. An account of his career would appear in the *Journal*, and it was proposed to have an exhibition of his works at one of their evening meetings. To mention one of his works, not by any means the most important, the interior of Christ Church at St. Leonards, was an object lesson to many of them in its simplicity, stately dignity, and proportion—so also was the nave of St. Saviour's, Southwark. Sir Arthur became a Fellow of the Institute in 1867. He was a Vice-President from 1886 to 1889, and he would have been President some years ago had he been willing to accept the office, which he felt himself compelled to decline, as he could not spare the necessary time. He was elected an Associate of the Royal Academy in 1888, and received the honour of knighthood the following year. He also was the recipient of the Queen's Gold Medal in 1891. Sir Arthur was the stamp of man produced by the old schools of architecture, now fast dying out; and, apart from his professional status, his modest and genial nature, his conversational powers, his kind and generous friendship, always willing to aid younger members of the profession with the fruits of his experience, endeared him to all who knew him. And, further, he was a staunch upholder of the necessity for honour, high principles, and morality amongst English gentlemen. This was emphatically proved by one of the recent acts of his life in connexion with a certain society to which he belonged. His death was a great loss to both the architectural profession and the Institute.

By request of the President, the Secretary then read the following passages translated from a letter he had received that morning from M. Charles Lucas, Hon. Corresponding Member, Paris:—

"But first I must ask you to associate my cordial and respectful remembrance with all the eulogies that will not fail to be given at to-morrow's meeting to the memory of our honoured and regretted colleague, Sir Arthur Blomfield.

Though I scarcely knew the works of this master architect save through the designs published in the *Builder*, yet on the other hand I knew the man, the perfect gentleman who showed such great authority and courtesy in presiding over the discussions of the architectural section of the International Congress of Hygiene in 1891.

My honoured colleagues, M. Fenger, of Copenhagen, M. César Daly and M. Emile Trélat, of Paris, M. Stubben, of Cologne, had the privilege at that time of paying with me a fresh tribute to the professional qualities of Sir Arthur Blomfield—and the memory of it still remains with me."

The following resolution was then put from the chair and passed by acclamation:—"That a note expressive of the sincere condolence and sympathy of the members of the Royal Institute of British Architects be sent to the widow and family of their deeply lamented colleague, Sir Arthur Blomfield."

Mr. Alexander Graham, Hon. Secretary, then announced the decease of Mr. Thos. Elworthy, Fellow, elected in 1884, and Mr. H. H. Burnell, an Associate, elected in 1849.

The President said it was also with much regret that he had to mention the death, on August 24, of Mr. William Simpsom, a student of Indian work, a correspondent for many years of the *Illustrated London News*, and an Honorary Associate of the Institute. He was an old friend of the Institute, always ready to place his learning at their disposal, and he had read several papers at their meetings. A notice of his career appeared in the *Journal* for August. He (the President) desired to move a vote of condolence to the family of the deceased.

This having been agreed to,

Mr. Graham announced that a statutory examination of gentlemen qualifying for the position of district surveyor was held on October 26 and 27. Two candidates attended, and the following passed and had been granted a certificate of competency to act as district surveyor in London, namely Mr. C. A. Daubney

President's Address.

The President, Mr. William Emerson, then delivered the following address:—

The coming session, for which I have the honour of occupying this chair, is the sixty-fifth in the annals of the Royal Institute of British Architects. It is also the last session of the nineteenth century.

In glancing at the doings of the Institute since its foundation in 1834, the thing I most keenly feel in this particular position is the exceeding difficulty and responsibility of continuing and worthily upholding the character and dignity of the work that has been achieved by my predecessors in office. I think the list of members of the Institute points to considerable and satisfactory progress in its affairs since its inception. In 1837 we had 96 Fellows and Associates, of whom 15 only were country members. In 1887 we had 1,109 members, of whom 259 Fellows and 435 Associates were from the metropolis, and 169 Fellows and 246 Associates from the Provinces. In 1899, since the federation of the country societies with our London body—and this is a fact I wish to emphasise—our number has increased to 1,612, of which 290 only are Fellows from the metropolis, while 328 are from the Provinces; and 552 London Associates, and 442 from the country. The number of societies in alliance with us in England, Scotland, Ireland, and the Colonies is seventeen. These figures show that the old reproach of this Institute being merely metropolitan can no longer be cast at us, but that it has now attained a national character and influence, as much appreciated by the members of the profession in the country as in London. The work also of the Institute is increasing each year in importance, making its opinions heard and felt in respect of many important public questions relating to architecture.

The conservation of our national monuments, building projects both for the metropolis and Provinces, the laying out of new streets

and town improvements, legislative Acts in relation to building operations, the representation of our Institute on many public bodies and committees where questions affecting architecture or buildings may arise, the conduct of competitions, the promotion of the education of architects by annual examinations, the presentation of annual prizes and medals, are some few of the subjects constantly dealt with by the Institute. Moreover, the Government at times does not hesitate to consult us on questions connected with public works. All these are fair proofs that the sixty-five years of our existence as a Royal Society have not been altogether wasted from a public and national point of view, apart from matters more immediately connected with the interests of the profession at large, and the future of architectural development. And the extending influence of the Royal Institute of British Architects seems in no danger of languishing—if one may judge by the vivid interest taken in its working and actions by the junior members—who yearly evince a growing desire to have more voice in its affairs. In respect to this point I may say the Council had under deliberation at the end of last session what steps could be taken under the Charter to associate them more directly with the work of the Council. Amongst other things it was decided to remove all restrictions as to the eligibility of Associates for seats on the Council. Also, with a view to extending our sphere of influence, a congress will probably be held in London this session, and in Glasgow in 1901 at the time of the Exhibition.

At certain periods in the lives of individuals it seems fit to review with a critical eye the actions of their past lives. So at the wane of a century notable for its progress in knowledge, culture, and civilisation, it may be opportune for us as architects to glance back and see if any advance has been made in our art (which the Charter asserts is esteemed and encouraged by all enlightened nations), and whether our efforts have been conducive to the benefit of mankind and the glory of our country through the part the Institute has played during the last sixty-five years in the furtherance of our national interests so far as they are affected by architecture.

There are several reasons why during this century great architectural developments might reasonably have been expected. It has on the whole been eminently peaceful and prosperous, which fact one would think should certainly affect all arts favourably; for rest, quiet, and prosperity seem essential to their growth. This peace and prosperity were brought about by the exhausted state of Europe at the cessation of the wars of the last century and the early years of this; by scientific inventions which developed our Empire, manufactures, and commerce; and in later years by the wealth and naval supremacy of Great Britain, the knowledge of the awful effects of modern warfare exemplified during the Franco-Prussian campaign, and the growth of civilisation and humanitarian sentiments. At the close of the eighteenth century and the beginning of the nineteenth Europe had passed through a crisis unparalleled in its character and effects in history. The Seven Years' war, the wars of American Independence, and the Napoleonic wars ending in 1815 had raised our National Debt to some 900,000,000*l.* sterling. Taxation was heavy, commerce stagnant, and there was little demand for labour. Our impoverished and tired counlry was eager for peace and only too glad to turn its attention to home politics and peaceful pursuits. Then the experiences of the French Revolution taught England lessons which resulted in provisions for the more direct representation of all classes of people in the government of the country, and the Commons became the people's House of Parliament. The more direct representation of the people tended to the furtherance of utilitarian and humanitarian projects. The humanitarian feeling of the age for the poorer classes was shown by the abolition of the slave trade. This feeling found further expression in such measures as the formation of new Poor Laws, Factory Legislation, School Boards, Prison Laws, Asylum Boards, National Training Schools of Art, Railway Bills, Building Acts, and County Councils. All these have in many ways provided opportunities for architects and largely affected architecture. But in most buildings for humanitarian purposes architecture has been hampered by the many necessary laws relating to sanitary matters, such as the relation of light area to rooms, superficial floor space and cubic air space, heating, ventilation, and drainage.

Whether architecture as an art has been improved by these conditions is questionable. From the utilitarian standpoint, committees and boards seem universally to affect architecture in an adverse manner; in fact, æstheticism and utilitarianism appear to be always antagonistic. But surely a properly educated body of architects should be able to reconcile the two. As well as from peace and the peaceful politics of the century, an advance in architecture might reasonably have been looked for from the influence of the increase of knowledge, our modern facilities of travel, the scientific discoveries and inventions, resulting in an enormous influx of wealth; also from archæological research, and the desire for culture, from literary and artistic productions in books, journals, and publications which have educated the taste of the public and also influenced that of architects.

Looking at past history, art seems to have acquired fresh vigour and life, and made greatest strides at periods of learning and culture during years of independence and peace succeeding great wars or troublous times. These latter have often lent inspiration afterwards to architects and sculptors for the adornment of buildings, and giving a living interest to their work. The comparative quiet of the fifteenth century, after the turbulent feudal ages, saw the rise of the Italian Renaissance. So, also, when the Western world settled down after the invasion of the Goths, they developed the best periods of Gothic architecture under the influence and teaching of the Holy Catholic Church. It was in the quieter years succeeding two centuries of continuous Mahomedan conquests that the stately and magnificent architecture in Africa, Spain, and the East developed itself. After the Persian sway had been destroyed at Thermopylæ and Platea, the Parthenon and the best Greek art were produced. So, too, at Rome the finest works of the empire were created during the period of comparative calm and prosperity that followed the subjugation of Greece.

Some critics decry our present architecture and say it often shows little taste and no advance in art or style. But they should recollect that the highest level of the arts of any of the periods above mentioned was not arrived at in a day, nor did their architecture leap to perfection in a decade, and certainly architecture then could scarcely have had to fulfil the complicated requirements which make modern architectural problems so difficult. The Parthenon was erected the best part of half-a-century after Platea. The best of Roman architecture was not evolved till long after the battle of Actium; nor did the best phases of Gothic architecture appear until after many centuries of patient endeavour. Also more than two centuries succeeded the rise of Mahomedanism before its literature and scientific knowledge developed, or its architecture resulted in the Mosque of Toloun. And many more passed before the erection of the tombs of the Caliphs, and before the elaborate refinements of the Alhambra and the perfect beauty of the Taj Mahal were arrived at. It took one hundred years of learning and study, initiated by the Humanists (who saw that, apart from the theological training of Mother Church, culture and scholarship are inseparable from true human greatness), to usher in the Italian Renaissance; and then a further century of study of Greek and Roman methods, and of experiment and invention elapsed during the Quattro Cento (of which the Hybrid Classic and Gothic of the Certosa at Pavia and the Cathedral at Como are exemplifications) between the rise of Brunelleschi, the erection of his Pitti Palace, and the dome of the Duomo of Florence, and the time of Bramante, Michelangelo, Raphael, Giulio Romano, Peruzzi, Sansovino, Palladio, with the production of such works as the dome of St. Peter's, the Chapel of the Medici, the Villa Madama, the Library of St. Mark's, and other works of the best period of the Renaissance.

Is there any reason for thinking that this history of an advance in, or a renaissance of architectural art, is in any way being repeated in our time, or that with the unexampled wealth and prosperity of this country during the last hundred years, there had been a stirring of the dead bones of architecture, and that we may even now be travelling towards the goal of a development of a fresh expression of English thought, and an evolution of a new modern style that some day may be no disgrace to our Empire? Possibly this might be answered in the affirmative, but what the evolution of our present methods may become remains to be seen.

At the end of last century the renaissance of the Cinque Cento, which a century or more later found expression in this country through Inigo Jones and Wren, had for years been in its decadence, and was at a very low ebb in England. The ascendancy of classicism in our public schools and universities, where Greek and Latin were taught, to the exclusion of modern languages and science, naturally had its influence on architects as well as on the general public, and resulted in a revived interest in Greek art and the study of Grecian architecture. This was encouraged and assisted by the researches and publications of Dawkins and Wood, and Stuart and Adams. But though in the first quarter of this century the antique was the fashion, mere reproduction was sufficient for work which was inevitably devoid of life. Greek and Roman façades or porticoes were attached to modern structures, ancient designs were reproduced irrespective of their suitability to modern requirements—sometimes effectively, but always incongruously. The British Museum, St. Prancras Church, and many of the churches with Doric and other classic porticoes, and town halls of this period illustrate this.

After the first twenty years or so, a more intelligent use was made of classic forms and details. It was then sought to give some expression to the specific purpose of each building, and some of our architects, following the methods of the Renaissance, began to use the borrowed details of Greece and Rome as a means to an end, and strove to adapt them more intimately to modern wants. The best works of Barry, Wyatt, Cockerell, and some others prove this. Also the printed works of Stuart and Revett, Cockerell, and Penrose showed the real meaning of Classic architecture. It is sufficient for my purpose to name some of the most prominent of our Classic architects, and their works. Amongst them were Decimus Burton, Soane, Nash, Wilkins, Basevi, Smirke, Wyatt, Barry, Cockerell, Elmes, Pennethorne, Cuthbert-Broderick, Gibson, of many of whose buildings we are proud. As examples of some of these works may be named University College, the Fitzwilliam Museum, Cambridge, Bridgewater House, the Queen's Mews at Buckingham Palace, the Taylorian Institute at Oxford, the Travellers', Carlton, Reform, and Athenæum Clubs, the Royal Exchange, Regent-street Quadrant, the Royal Institution High Schools at Edinburgh, the St. George's Hall, Liverpool, the Leeds Town Hall, the London University, Burlington Gardens, and our much-maligned National Gallery, which the late Lord Leighton said "had often been made the butt of curiously unmerited ridicule, though it is much easier to deride than better it." Also the Union Bank, Bishopsgate. Such buildings as these show that a distinct revival of Classic architecture arose in this country during the second quarter of the century, and how great an influence Classic education had upon men's minds, there being no recognised national style in which all were constrained by public sentiment to work. In fact, Classic architecture appeared to be well set in public estimation with considerable chance of becoming the national style. Still, however greatly we may admire these works, they are wanting in the real life and interest found in the best buildings of any style, whether Greek, Roman, Gothic, or Renaissance. In many respects they were unsuited to modern conditions and environment, and they bear no hint in their sculptured adornment of our country's history or life, and are thus devoid of one of the most vital and essential elements of good architecture.

It has been suggested that ornament is not architecture, but a very subordinate and non-essential part of it. On the other hand, Ruskin has said that structures without beautiful adornment are mere buildings and not architecture. The truth may lie between the two, but it is certain that the best architecture has always been intimately allied with sculpture, which invariably lent it its most vivid and living interest.

Apart from the more important buildings of this earlier half of the century, much cannot be said in favour of the domestic and more common buildings of these years. Stucco was predominant, it hid a multitude of sins, and compared with the better built and simpler

style of the domestic and cottage architecture of the last and earlier centuries, there was nothing to boast of. In ecclesiastical work, the Gothic style was used concurrently with the Classic for secular purposes, but mainly of a Late or Perpendicular period, and producing a cast-iron effect, rather than exemplifying the spirit of good mediæval examples. Then came a different phase in the architectural thought of the century, which was almost the death-blow to the Classic revival. There were many elements at work which produced the awakening of interest in mediæval art, and which caused Classic to be almost superseded by Gothic architecture, at any rate, for a time. The discovery of steam as a motive power for one thing, had caused a great influx of wealth and ease of travelling, resulting in a wider knowledge of the architecture of other countries, and of past styles.

No modern movement has been more influenced by literature than the Gothic revival. Horace Walpole may have been a fribble, but he had a firm though uninstructed faith in Gothic. Beckford, the author of "Vathek," spent much money on what he conceived to be mediæval art, while Sir Walter Scott both built and wrote Gothic as he knew it. Then about 1835 Pugin published his "Contrasts," a vivacious and most sarcastic criticism on Pagan methods of architecture compared with mediæval or "Christian." In 1841 his apology for the revival of Christian architecture was published, and other works followed, full of ardent enthusiasm for the resuscitation of severe mediævalism, particularly in reference to ecclesiastical structures. Ruskin's writings also greatly influenced not only architects, but their religious tone appealed to the public. At first, though, they were too strong meat for babes, as was shown in much Gothic work done shortly after. For example, owing to some remarks of his on the value of the outlines of the openings of traceried windows being more important than the details of the moulded stonework, the very coarsest plate tracery was erected, I suppose in exemplification of this truth, and for the economy in labour in refined mouldings. He powerfully pointed out the beauties of Gothic work and urged the necessity for the living interest of good and meaning sculpture in noble architecture.

The publication of other works on mediæval art and architecture by Rickman, Pugin, and Le Keux, Scott, Parker, the Ecclesiological Society, Nesfield, Street, Shaw, Butterfield, Burges, and others, also Viollet-le-Duc's "Dictionnaire Raisonné," with its magnificent analysis of the scientific construction of Gothic work, put this style in an altogether new and entertaining light before the student. It increased the attraction of thoughtful men to the beauty, science, and detail of the Gothic styles. I can well remember, whilst a pupil with Burges, the intense excitement caused by the arrival of each fresh part of this work. Added to this the Oxford Movement and the societies it gave rise to for the resuscitation of disused ecclesiastical forms and ritual caused the study of ancient church architecture and arrangement to be taken up by the rising clergy and others at the universities, who henceforth were careful to go to the most capable architects of the Gothic school. This movement also provoked greater enthusiasm amongst the architects themselves. Then ensued the battle of the styles. The ardent enthusiasm of the Gothic men for a revival of Mediæval art and architecture, which blinded them to the beauties of Classic, and the persistent denunciation of the severe Classicists who could see no merits in Gothic, gave good grounds for the vigorous diversion of opinion which raged during the middle years of this century. Gradually, however, the Gothic school seemed to gain an ascendancy, which lasted until the seventies. There were, however, architects practising in both Classic and Gothic, according to the tastes of their clients. Wilkins practised in both styles, and the best work the Italian Barry produced was perhaps our Gothic Houses of Parliament. At first the early thirteenth and fourteenth century English work was the admiration of those Gothic partisans; then Viollet-le-Duc's works brought Early French into fashion, as being larger and grander in effect. Later on, entire satisfaction not being derived from these (they were, I suppose, too simple and pure for the complicated environment of our many-sided lives), Decorated and Jacobean each had their turn. Amongst the works of this Gothic awakening, those of Pugin, Scott and Moffat, Pritchard, Paley, Butterfield, Street, Burges, Godwin, Pearson, and I may now add the name of Sir A. Blomfield, are the most prominent, and others, some of whom are still alive, but mainly in ecclesiastical buildings. I cannot here name examples of the works of all these men, and the best of them are known, I suppose, to most of us.

It was in the forties that Pugin built his own house and church at Ramsgate, the only work, I believe, he said he ever really enjoyed doing, and this because he was unhampered by a client. A little later he rebuilt Alton Towers for the Earl of Shrewsbury, and St. John's Hospital, Alton. He also erected or restored some forty or more churches and cathedrals, and some twenty conventual and a number of domestic buildings. But the work which perhaps added most to his fame was the assistance he rendered in the working out of the intricate and refined details of Sir Charles Barry's sumptuous design for the Houses of Parliament. To my mind it is a fine combination, Classical in its symmetry and horizontally, and Gothic in its picturesque outline and detail. In many respects it is the most notable building erected in England during this century, and to many it must be a matter of congratulation that our great Houses of Parliament should have been designed in a national English style of architecture, rather than in the more monumental Classic. At any rate, whatever our views as to style may be, it stands as one of the most complete and best buildings of modern Europe.

Of the men of this period, Sir Gilbert Scott stands out pre-eminent, not so much, perhaps, on account of any very particular individuality or extraordinary excellence in his works—though at the time they were extraordinary—as from the great part he played in the revival of this period, his enthusiastic zeal, and the establishment of what one might almost call a school of Gothic architecture, caused by the enormous number of works carried out by him in the erection and restoration of churches and cathedrals, and the training a staff or school of young men sufficient for the purposes of his enormous practice. But for the overbearing attitude of Lord Palmerston, we might have had from Sir Gilbert Scott in the Foreign and Colonial Offices a building which would have been as grand a success as the Houses of Parliament.

However critically we may examine, at the present day, the works of these great men, we must always remember that the advantages of our time in easy travel, access to architectural libraries, and the multiplicity of illustrated works on all branches of architecture now open to us, and the enormous increase during the last fifty years of archæological works, were not experienced by them. They were not smothered by learning as we are; they had to find out for themselves that which we can learn easily from others, and with more limited knowledge than the student of these days *ought* to possess, they worked energetically and earnestly for the resuscitation of our indigenous style of architecture. Further, however much the methods adopted for the preservation of our national monuments may be cavilled at, and criticism is often captious, had it not been for the men of this period, many of these buildings would have been, by this time, well on the road to irretrievable ruin. To them, therefore, members of this Institute, and men who gave much time and thought to its working, not only our gratitude, but that of the nation is due.

In some respects, perhaps, William Burges was the most original of the purist school of Gothic architects of this revival period, and the most deeply imbued with the mediæval spirit and the most familiar with its art and craftsmanship. He also insisted that architecture was not worthy of the name if it did not tell some tale, historic, poetic, or otherwise. He also urged a point which seems to have been lost sight of in these later years—namely, that all architects should learn to draw the human figure, and design their own sculpture, at least as to grouping and arrangement. His competitive design for the Law Courts, if not the best, was certainly the most monumental and notable of the Gothic ones submitted. His work at Cardiff for the Marquis of Bute, and in his own house in Kensington, in Cork Cathedral and Studley Royal and Ripon Churches, shows a genius for the invention of interesting and beautiful detail in the true mediæval spirit that no other architect of his age has approached.

Street's works also are so well known to you all that to mention more than one or two would be waste of time. He was one of those who saw that ecclesiastical architecture should meet also the requirements of modern times—that large churches should be adapted for congregational purposes, and it is instructive to note his endeavours to connect a wide nave with a narrow choir—not always successfully, as at Bournemouth, where he canted the eastern-most bays of the nave inwards, causing a pinched effect just where an open and spacious area seems to be demanded. His works, whether ecclesiastical, public, or private, were always interesting from the vigorous personality impressed upon them, and this was always apparent in his early works, as in the church at Garden-street, Westminster in the later and much more refined one at Vassal-road, Kennington, in the house he erected for himself at Holmbury St. Mary, the mansion in Cadogan-square, and in the Law Courts, which was the last great effort of his life. These Law Courts, unfortunately, seem to have given the death-blow to Gothic. It was not the fault of the architect so much as that of the Building Committee, who seem to have been determined to have a large central hall. Accordingly, designs without this feature were discarded, notwithstanding that this waste of space, useless also as a foyer to the courts, deprived the building—to which an insufficient site had been appropriated—of the last chance of obtaining light and air to the corridors. The plan of this building may not be all that could be desired, but that is hardly the fault of the style of architecture, though from this fact it has been argued that Gothic is unsuited to modern requirements.

Of the other notable figures in this revival of mediæval architecture I will only mention one. All were working for the same end, though often on slightly different lines and with varied success as to the quality of their work. In referring to the late Mr. Pearson, I will only mention his last and, I suppose, his best and most beautiful work—namely, Truro Cathedral, and simply to point out what was certainly one of the failings in the methods of the Gothic revival. Truro is a modern cathedral intended to serve modern needs, but it appears to have been designed with a view to reproducing a mediæval church, whose plan was originated to meet requirements of other ages—entirely different from those of to-day. There can be no doubt that for congregational purposes in these days, and for worship in which all can join, a central tower on piers blocking up the best part of the internal area is a sad mistake, and inexcusable unless a particular object of our church building is to erect in plan and detail mediæval structures that in future ages may deceive the inquiring archæologist. This was not the spirit of the men of the Italian Renaissance. But it is useless to attempt to specify the characteristics or buildings of each of the notable men of this Gothic revival period; their best works are known to us all. However adversely faddism or conceit may criticise many of them, it cannot but be felt that they greatly redound to the credit of the architects of this period, and also add the greatest interest to the history of the architecture of the century.

Since the seventies hot enthusiasm for a resuscitation of any definite style of Gothic seems to have smouldered and died, and to have been succeeded by a period of flirtation with pretty well all styles of architecture. Byzantine, Moorish, Romanesque, Queen Anne, Dutch, French Renaissance, and even Egyptian have each had their admirers. The plain and severe, the rococo and ugly, the picturesque and grotesque, have all been tried—all being the result of the study or copyism of debased deductions from those original styles which inspired the greater Classic and Gothic architects of the second and third quarters of this century. The study of the purest examples of art or architecture must be the best tuition; if we endeavour to emulate the debased, our work will be on a still lower grade—

> "Noble souls
> Still find the base is hurtful, and the good
> Is full of glory."

I have heard of an architect saying he adored drawing a piece of impure detail, and another that he delighted in designing something that would give a shock, and I think their works prove the truth of their remarks. Such sentiments, however, can arise only from an ill-regulated fancy or from a vulgar desire to attract attention, and cannot lead to great

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results. The overloading of detail and ornamentation is again another phase of a similar feeling. Many of the so-called adornments of modern buildings are not only not indispensable, but positively detrimental to the dignity of architecture. Nevertheless, these later years have been marked by a keen study and most enthusiastic interest in and desire for the good and beautiful in architecture, with an earnest attention and effort to discover the right adaptation of known (and shall I add sometimes unknown?) architectural forms to the manifold and complicated requirements of the time.

In looking back then, generally, at the architectural work of the century, what evidence is there of there having been, or being, any revival of architecture in any way similar to those of past periods? Sir Gilbert Scott once said in these rooms, in reference to the earnest enthusiasm of the middle of the century for a resuscitation of our English Gothic architecture, that no parallel to it had occurred since the Italian Renaissance, and I believe he was right; and, further, I believe that we are at present moment in course of an evolution in art that may in time result in a uniform national style. And for the following reasons:

During this century there seem to have been three fairly distinctive periods. In the first the Classic style was zealously cultivated; in the second, the resuscitation of Gothic was passionately preached; in the third, no one style has predominated, but there has been a restless searching and craving for something that shall satisfy the conditions and requirements of modern life.

In the first period, though Classic teaching led to the study of, and desire for, a revival of the antique, it was differentiated from the movement in Italy of the fifteenth century by so many of our architects subordinating modern requirements to a clothing of ancient examples reproduced for the purpose, rather than designing in ancient methods with an individualistic treatment suitable to the occasion. This arrested true progress. It therefore failed in altogether impressing the nation with its suitability for English nineteenth century architecture. Nevertheless, there was in the movement a zeal for stately and noble work, and it was this desire which caused the founding of the Royal Institute of British Architects as one means for the attainment of the end.

The second period, with its thirst for knowledge and culture and facilities for education, certainly evinced a similar feeling to that which found expression in the Humanists of the fourteenth century in their insistence on scholarship and culture being necessary for the elevation of mankind. In their case it was apart from, rather than in conjunction with, theological teaching; while in this century, notwithstanding the broad views and freethinking tendencies of the age, it has been side by side with a distinctive religious awakening, which started and then kept alive the interest and desire for a revival of mediæval art, under the plea that it alone was Christian. This mid-century Gothic movement began with ecclesiastical architecture and extended itself to civil work also. But it failed, as did the Classic movement, in establishing itself as a recognised national method or style, and also for somewhat similar reasons. A slavish copyism was engendered by reason of the scorn cast by the purists on detail inexact in its reproduction. To this school it seemed of more importance that every portion and detail of a modern Gothic building should have its precedent in the Middle Ages than that, as a building, it should exactly meet modern needs. This arrested individualism and thoughtful adaptation of the mediæval methods to our complicated modern wants. It was exactly (with some exceptions) the reverse of the principle which actuated the sculptor-architects of the Italian Renaissance. They adopted antique methods and details, and with original ingenuity pressed them into subserving their plans, not permitting them to dominate the requirements of the time. Nevertheless, there was in this Gothic movement the evidence of life and a distinctive and ardent striving after more architectural light, and a national general style; and this feeling was fostered and kept alive by men who were members of this Institute.

England owes much to the men who led our Classic and Gothic schools, and one cannot but feel that Fergusson's severe criticisms on their works are harsh and unjust. From his remarks it might be supposed that they used no brain power whatever, but simply copied, nor cared to do more than copy. He argues as if it were to be expected that a perfect style suitable to all our complex modern life could have been attained at one jump. We know that long periods, centuries even, are required for such an evolution. He seems to have thought that their first efforts should have reached the highest levels. A more reasonable view is that the copyism he denounces was but the first step in a legitimate process of development. Both by the Classic and Gothic purists of this country that step was honestly taken. In this, the third distinctive period of the century, we see architects abandoning purism, and betaking themselves to an eclectic treatment of the two great branches of style. May we not hope that along this line a national architecture may eventually be reached, at once good in an artistic sense, and flexible and useful from a practical point of view? An analogous phase was gone through in the Early Renaissance. Should this happen, I venture to think that the Royal Institute of British Architects has contributed to it in no small degree, for the leaders of the movements I have indicated were members of our body, and we may justly congratulate ourselves on the steps we are taking to foster emulation of such excellent examples, for the careful and wide study of the rising generation of architects is fostered by it, and their keen interest is proved by the splendid results shown in the work produced under the incentives offered by this Institute in the presentation of medals, prizes, and travelling studentships for designs, draughtsmanship, and for architectural research.

Personally, I have a strong conviction that the evolution of a sound architectural style must be accompanied by a development of the neglected art of architectural sculpture. At all the best periods of architectural development the sculptured adornments of the buildings (except where religion forbade, as amongst the Mahomedans) told their history. Have we, with our enormous Empire, nothing to record? Or is it owing to inability, indifference, or parsimony that our life and history find no place in our architecture? Or does the crushing weight of the utilitarian element overwhelm artistic effort?

Our Houses of Parliament have some forty or fifty statues of kings, &c.; the sculptured subjects suggested in Scott's Foreign Office design and Street's Law Courts were pruned away by the Government. Our huge railway stations and commercial and domestic buildings show nothing but meaningless ornament. Will our new Public Offices illustrate in any way the growth of her Imperial Majesty's dominions? Or is the country too poor or indifferent to give our sculptors such a chance? Is it not impolitic of a Government in these discontented days to discourage the development of a craft the highest in art, which elevates public spirit, gives employment to a large class of the most intelligent workers, and at the same time raises the standard of architecture, and enhances the glory of a country? I learn that Frankfort has lately started a fund, the income from which is to be spent in the adornment of the town with sculpture. This shows the increasing feeling there is in the cultivated world for snch a step. Why cannot we do likewise? However, sculpture is a detail of refinement and adornment, and, if architects would suggest it properly and wisely, might possibly more often find place in our buildings. But aid from sources external to architects is needed in other ways if a national architecture is ever to be arrived at.

London seems practically in process of rebuilding in its main centres, and constant enlargement is taking place in the suburbs. Surely steps should be taken to prevent our new streets being eyesores instead of improvements and to avoid the repetition of such a medley of incongruities and commonplaces as may be found in Shaftesbury Avenue and Charing Cross-road. Architectural opportunities in these streets were afforded, which, under proper control, might have had a magnificent result. Surely there should be some controlling power to settle the general lines, heights, and materials of buildings and style of design. That the London County Council has something to say as to construction and heights is true, but their purely practical conditions being complied with, any one can build according as his own sweet will, taste, or ignorance may prompt. This cannot be the right method in a great Empire for the fostering of a national art like architecture. Every man who builds in a public street has a duty to the public to perform. His building should not endanger the safety of the public, but neither should it be a shock to their sensibilities. Proper control should render it impossible for us to see such a thing as I noticed the other day—a dull red brick Renaissance house on one side of a bright glazed teapot ware pseudo-Gothic building, and a stone nondescript erection on the other—all of different heights, horizontality, and materials, while close by was another huge stone façade with heavy projecting columns and pediments, constructed surface ornament, standing apparently on nothing but sheets of plate-glass. Can anything be worse? Notwithstanding the modern shopman's requirements, architects should resolutely set their faces against such hideous ugliness. In indifferent matters each man should have liberty of taste, if the indulgence thereof injures neither himself nor others. Individualism is needed in art, but if the imagination or individuality be only a mark of undisciplined self and an offence to art, it is positively injurious in its demoralisation of public taste, and should be restrained. Were there a Ministry of Fine Arts, with a committee of control under a chief whose qualifications were not *only* political, surely something might be done.

The committee who were responsible for the Chicago Exhibition—a work which was magnificent in its effect, as all who saw it were agreed—was composed of architects and sculptors, who were charged with the erection and adornment of the numerous palaces. This committee settled the general style of buildings to be erected, the heights of cornices, floors, &c.; and each design was submitted to the criticism of the whole committee, who passed it, or suggested improvements, which the architect was forced to consider. The result was grand and stately, such as those who did not see it can hardly realise. I only mention this to show what can be done by intelligent control, and I do not think we are behind our American cousins in either intelligence or capacity for design.

The Ministry of Fine Arts in Paris has such a controlling voice in all matters of public works, in laying out of the streets or boulevards, in the erection of public monuments, and even in their bridges. In France it is entirely out of the power of any one to erect unsightly edifices in prominent positions to the annoyance of the artistic sense of the nation.

There is another thing that also affects our architectural design. We are always, in these days of greedy competition, in too great a hurry and rush. Art is long, and sufficient time for thought and quiet for solitary reflection is not afforded the busy architects of the day to properly solve the problems set before them. Designs for half a million's worth of building have to be prepared, submitted, and passed probably in, say, three months, and then the unfortunate architect is told that his designs are not equal to those of past ages. Ralph Waldo Emerson says, "We do not get enough of solitude, with the result that our minds are in danger of being vulgarised and of being unable to see things in their proper proportion." This is exactly what frequently happens to the architect of to-day: he does not get enough quiet for meditation.

Let us hope that next century our architects, with their increasing wisdom, which will enforce periods of rest for reflection and mental recuperation, and with higher cultivation which will improve taste, and under wiser auspices which, with an imperial spirit, will exercise an enlightened control, may develop a true style, sufficient for modern requirements and satisfying to æstheticism.

As this goal cannot be reached by architects working on different methods and lines, and competing to outdo each other by differences or eccentricities of style, let us hope that we may, in a glorious enthusiasm for our art, be led to sink personal predilections in combined efforts to seek the true artistic adaptation of our architecture to modern requirements, and that such efforts may in time elucidate a style suited to the twentieth century, which, while allowing of individualism in the treatment of details, may have a general harmony and at last eventuate in a distinctive national architecture, stately, dignified, and picturesque—an architecture that may enhance the glory of this great empire, and be a proof that the British nation is neither sordid nor penurious, but in its highest state of civilisation may become

capable of emulating the best art history of past ages.

Mr. J. Macvicar Anderson, in proposing a vote of thanks to the President for an address which they had listened to with great pleasure, said he gladly embraced the opportunity of congratulating the President upon his occupancy of the chair, being fully persuaded that he would discharge his duties in a manner creditable to himself and conducive to the best and highest interests of the Institute and the profession of architecture. He could honestly congratulate him upon the address they had just listened to; in his (the speaker's) opinion, it was no ordinary or commonplace composition; it was a masterly review of the architecture and architects of the past century—exhibiting great research, full of suggestive thought, and entirely free from any illiberal or merely sectarian opinions. The President, in his opening remarks, referred with satisfaction (and rightly), to the growth of the membership of the Institute, and proceeded to draw a distinction between metropolitan and provincial members, remarking that the Institute now had attained not merely to a metropolitan but to a national character. He (the speaker) quite agreed, but he did not think the President went far enough. What a few years ago was national was now absorbed in the imperial, and the days of splendid enthusiasm, patriotism, and loyalty of the colonies to the mother country. At such a time it ought to be a pleasure to reflect that out of the 770 members who were described as provincial, there were no less than seventy-eight who were practising in the colonies—members of the Greater Britain. He should like to say a word as to the financial position of the Institute. When he (the speaker) had the honour of being President the position of the Institute in that respect was not altogether satisfactory; they had spent large sums on the premises, and their publications had become more expensive than was desirable. Now the state of things was much more satisfactory; for the last three years there had been a surplus; in 1896 it was 591*l.*; in 1897 it was 1,116*l.*, while last year it was 1,241*l.* He referred to this matter because he hoped the Council would realise that it did not necessarily follow that because there was a surplus they need spend it. He was one of those who maintained that the Institute ought to have a more worthy home, and he hoped to live to see the day when they would be more suitably located. But they should not be in too great a hurry; let them take full return for the money they had spent on the premises already, and after a few years, when they had accumulated a surplus of 20,000*l.* or 30,000*l.*, let them find, or better still build, a worthy home for the Institute. The President had dealt in a masterly way with the architecture of the past century, and he (the speaker) thought they might for one moment take a glance at the future. London was continuing to expand with great rapidity. He had known London for nearly fifty years, he was sorry to say, and he should have thought that this expansion would have shown some sign of stopping; but that was not the case; our suburbs were extending with amazing rapidity, and who could say when that extension was going to end? He was satisfied of this, that in proportion as greater London continued to extend, central London was becoming more and more congested and unfit for the work it had to do. In the coming century it was almost certain that the principal thoroughfares of the centre of London would of necessity be widened and enlarged, affording great opportunities to the architects of the day. Would those opportunities be properly and worthily taken advantage of? He turned partly to the President's address for an answer. The President had remarked that "the study of the purest examples of art or architecture must be the best tuition." With that he heartily agreed, but a little later the President said, in reference to the third distinctive period of the century, viz., the days in which we are now living: "We see architects abandoning purism, and betaking themselves to an eclectic treatment of the two great branches of style." That was not so encouraging an observation as the first. The President had very happily expressed the state of architecture in what he had referred to as the third distinctive period of the century, in the words "a period of flirtation." He might have sought long without finding words which would have so fitly expressed what we see around us, and it could be no matter of surprise that the severe classicist, the stern mediævalist, or the chaste purist found much to condemn. But the President had taken an optimistic view of the matter, for he believed that good would come out of evil, and that a distinctive national architecture would be evolved. He (the speaker) hoped that that would be so; he was far from condemning all the work of the day, for he thought there was much to be admired, as well as much to be condemned, and he joined hands with the President in looking optimistically to the future. As to the President's remarks about some controlling power over the architecture of London, if such control were to consist merely in the appointment of a Cabinet Minister for political reasons, he could not see that it would lead to much good; if, on the other hand, we had a permanent Minister of Fine Arts, appointed solely because of his knowledge of the arts, then good might result. He hoped that something of the kind might be done, and that the optimistic views of the President might find expression in the architecture of the twentieth century.

Mr. Joseph Smith, President of the Sheffield Society of Architects, seconded the vote of thanks on behalf of the Sheffield Society and other allied societies. The Institute would do well to consider the fact that it had a membership of 48 per cent. in the provinces. Over 50 per cent. of the Fellows were to be found in the provinces, and 45 per cent. of the Associates. Moreover, the provinces had only just been tapped, and if the Institute would try to become of practical value to provincial architects, as it had become to metropolitan architects, there would be a much larger accession to the membership from the provinces. There were many architects in the large provincial towns who did not consider that the Institute had rendered any very great service to the profession; but that impression was gradually dying out, and since provincial societies had been allied to the Institute the Institute was rising in the esteem of the provincial practitioners. And junior architects in the provinces were aspiring more than they did in the past to be connected with the Institute. He greatly admired the masterly address which the President had just delivered, but he did not know that he agreed with him in his remarks as to definite and conscious efforts to realise a national style of architecture. He (the speaker) did not think that a style was evolved by definitely trying to evolve it. They would arrive at a definite national style by honestly and seriously working out the problems which came to them day after day—meeting the requirements of those for whom they built, and clothing their efforts to meet those requirements in the most artistic and pleasing forms. It was for the Institute, which had for its highest aim the advancement of architecture, to try to lead, by the educational efforts it made, young students into right lines of study, and to enthuse them with the desire to meet the problems of the day in the most artistic manner.

Mr. F. C. Penrose said he was sure they must all have agreed with the President's remarks on the death of their illustrious colleague, Sir Arthur Blomfield. In regard to the President's address, it required to be read to be thoroughly appreciated, but Mr. Emerson's remarks on the architecture of the past century were most interesting. As to the new century, we must wait one year before the present century was quite finished.

Mr. Macvicar Anderson then put the vote of thanks to the meeting, and it was carried by acclamation.

The President, in a brief reply, said, in answer to the President of the Sheffield Society, that he was afraid he had not worded the last sentences of his address as carefully as he should have done. He did not intend to convey the idea that we ought to try and definitely evolve a new style. He thought his previous remarks pointed to his belief that it would take a long time, possibly a century, to do that; the new style must be a question of evolution, and not merely of putting their heads together. It must be the outcome of an architectural effort to meet the requirements of the day.

The President then announced that in regard to the next meeting it had been arranged that a paper should be read on the Paris Exhibition buildings of 1900, by M. Ch. Lucas; but inasmuch as the buildings were not sufficiently advanced for an adequate paper to be prepared, it would be deferred from November 20, to December 18. The paper on the 20th inst. would be by Dr. A. S. Murray, whose subject would be "Decorative Patterns from Excavations in Cyprus in 1896." Dr. Murray will give a general account of the excavations which he carried out for the British Museum.

The meeting then terminated.

THE CRYSTAL PALACE ROOF.

From more than one standpoint the Crystal Palace occupies a unique position. By children of successive generations and by visitors from other countries, it is regarded as one of the places which must of necessity be visited; and as an example of constructional work it has afforded, and still affords, ample cause for admiration. The original genius of Paxton, previously devoted chiefly to the design of glass-houses and conservatories, found greater scope in connexion with the Exhibition of 1851, for which he proposed a temporary building, mainly of cast-iron and glass. His scheme, brought forward by Messrs. Fox & Henderson, was adopted by the Government of the day, and the first "crystal palace" became an accomplished fact. At the conclusion of the Exhibition the general feeling was that it would be a pity if so beautiful a structure were allowed to be dismantled without hope of resurrection. Accordingly, the Crystal Palace Company was incorporated for the purpose of employing the materials in the grander building, afterwards erected at Sydenham. One of the remarkable characteristics of the present structure, necessarily transferred from the old one, is the geometric proportion preserved throughout. All the chief dimensions are multiples of the number four, and it is interesting to recall the reason which established the necessity for this basis. When the Exhibition building was taken in hand, a most essential matter was to ascertain the maximum size per sheet in which large quantities of glass could be bought at short notice. As the extreme length obtainable happened to be 49 in., this dimension settled the unit basis of 4 ft. At the present time, when the desirability of "standardising" engineering work is under discussion, we may look back nearly fifty years and find that Paxton did the thing we are now advocating, but not practising to any considerable degree. So great was the assistance afforded to the engineers by the adoption of a standard basis, that Messrs. Fox & Henderson were able to accomplish the phenomenal feat of working out all the details of construction for estimating purposes in a single night. Of the building itself, no higher praise can be awarded than is implied in the statement that it was originally devised for temporary use, and has really become a historical monument. After the lapse of some years, attention was directed to the roof, owing to the increasing difficulty of intercepting wind and rain, and a large number of the glass panes had been broken, chiefly by reason of expansion, for which little provision had been made. The directors, therefore, decided to replace, not the roof, as we notice some journals have said, but the glass, sash-bars, and gutters. The first part of the work undertaken is that covering the central transept. Without wishing to retail well-worn information upon constructive details, we may perhaps mention one or two main features which will tend to make more clear the nature of the alterations now in progress. Measuring 384 ft. long by 120 ft. wide, the central transept is spanned by an arched roof having a radius of 60 ft., and whose crown is 161 ft. above the floor level. The roof, with a superficial area of two acres, is an arch of depth sufficient to enable it to act as a girder, communicating very little horizontal thrust to its supporting structure. The semi-circular arch consists essentially of main ribs, braced together in pairs by purlins 24 ft. long, and each pair of ribs is 72 ft. distant from others at each side. Narrow purlins fill the space between the pairs of ribs, and support intermediate rafters. None of this work, built partly of wrought and partly of cast iron, is to be disturbed. New gutters, attached to the main and intermediate ribs, as before, are now being furnished, together with new sash-bars disposed in accordance with the "ridge and furrow" system invented by Paxton. Formerly 15 oz. glass in panes 10 in. wide, was secured in grooved sash-bars by means of paint. In future 26 oz. glass, in sheets 18 in. wide, is to be carried by sash-bars

on the patent "Eclipse" system of Messrs. Mellowes & Co. (who have carried out the new glazing), consisting of steel with a specially rolled T section, and entirely covered in one piece by tin-lead metal. A double flange at the top of the glass prevents the entrance of dust or rain, and underneath, a third flange renders the bar drop-dry. As no portion of the steel is exposed to the atmosphere, and as the other metal is practically unaffected by climatic influences, the arrangement is one admirably suited for work of the kind we have mentioned. Workmen have been engaged on the roof for about five months, and in a few weeks time, when the canvas screen is removed on completion of operations, the improvement effected will be strikingly demonstrated. Up to the present about 12,000*l.* has been expended under the direction of the consulting engineers, Sir Douglas Fox and Mr. V. B. D. Cooper. We may further mention the fact, that at one time the whole of the water, drained from the roof of the Palace, was entirely wasted. Considering that the total roof area is approximately 14 acres, and taking the annual rainfall at 24 in., a very simple calculation shows the volume falling on the roof to be 7,623,000 gallons a year. It is worthy of note that the whole of this water is now being saved by the adoption of a scheme recommended by Mr. W. T. Carr, the Resident Engineer.

MONUMENTAL BRASSES.*

THE subject which I have the honour of bringing before your notice to-night seems to me to be one of the most fascinating and interesting of the many branches of archæology connected with our art, and yet at the present day it appears to be very generally neglected among our students, no doubt owing to the necessity of studying more closely the essential branches of knowledge required by an architect.

Monumental brasses afford us the means of studying many of the facts about our ancestors which it would be difficult, if not almost impossible, to get at without them. The architect will see the application of Gothic art to what we may call one of the allied crafts. Those interested in genealogy will find much authentic evidence of the illustrious persons of former times, and can trace by means of the heraldic charges the connexions between various families. The antiquary will gain information on many subjects, *e.g.*, the costumes and armour of different periods, the language in use and the forms of letters as well as the customary abbreviations in use at the various epochs. Some of our members are interested in the subject of ecclesiastical vestments, and will find that a small collection of brass rubbings will throw considerable light on their use and appropriate ornament.

The brass seems to be the direct descent of two earlier forms of memorials, viz., stone incised slabs and Limoges enamels. Incised slabs are precisely the same kind of memorial as the brass, differing only in material, but this difference is very marked in its results. The vast majority of incised slabs have been worn away to such an extent as to be nearly obliterated, whereas the brass, especially the early form, is almost as perfect and clear as when it was first laid down. Limoges enamels came into use generally about the twelfth century, and consist of rectangular sheets of copper overlaid with costly coloured enamels, the colours being divided from one another by narrow ridges of metal. On account of their great cost these memorials were always of small size, and owing to the frailty of the enamel soon fell into disuse. It is, however, noticeable that the earliest existing English brass, that of Sir John Daubernon, 1277, in Stoke D'Abernon Church, Surrey, shows that the blazon on the shield was done with enamel. Other examples also exist.

Brasses were made of an alloy known as latten, and an example has been subjected to analysis and found to consist of 64 parts of copper, 29½ of zinc, 3½ of lead, and 3 of tin, the whole forming a very hard and durable substance, much stronger than many of the modern yellow brasses which soon wear away if laid on the floor where people walk. The material seems to have been chiefly made at Cologne, and imported into England in the form of rectangular plates. The engraving was done by craftsmen divided into guilds formed in various centres, of which London was chief, who worked from designs of the draughtsman. This accounts for the great similarity to be found among the brasses of the same locality and period. Brasses, like other forms of applied art, went through the cycle of rise, development, and decline, and are generally grouped in periods as follows:—

Rise (Edward I. and II., 1272-1327).—In this period the figures are generally life-size, the drawing bold, lines deeply cut in, and cut from very thick plates. Under Edward II. canopies are first found, generally simple in design.

Development (Edward III. and Richard II., 1327-1399).—The figures now are a little smaller and the drawing more conventional. The inscription is generally in Norman French. Canopies are frequent and elaborate; floriated crosses abound and bracket brasses are to be found.

Decline (1399-1773).—The size of the brass begins to decrease, the engraving gets more shallow; exaggerated forms of dress appear; the recumbent position is commonly abandoned, shading is frequent, and boldness gets lost.

The earlier forms of brass, thanks to the thicker metal used and better workmanship, are usually in a much better state of preservation than those of the reign of Henry VIII. and later; in fact, few collectors care to keep many rubbings of later specimens.

As I have been frequently asked how to make a rubbing, it may not be out of place to describe the method usually adopted. Having found a brass and obtained the permission of the authorities to make a rubbing, first carefully dust it to clear away all dust and fine grit from the channels, or the paper will be torn during the process of rubbing; then cover the whole of the brass with white lining paper of medium quality, which costs about 15d. per roll of about 12 yards; carefully weight the paper down by means of hassocks, &c., in order to prevent any slipping of the paper whilst rubbing, as any slip almost invariably means such a disarrangement of the rubbing as to necessitate a fresh start. Having fixed the paper, it is advisable to mark carefully the form of the brass in outline by pressing the paper tightly round its edge, in order that when rubbing the heelball may not rub anything except the brass; this is not so important when the rubbing is afterwards to be cut out and mounted on canvas, and it is difficult to avoid. The heelball used is of three kinds, "hard," "medium," and "soft," and can be obtained at any shoemaker's at 1d. a lump. Ullathorne, of Lincoln's Inn-fields, makes a larger ball, especially for brass rubbing and it is certainly more useful in dealing with larger surfaces than the small lumps. I find it best after marking the shape of the brass to take a

Fig. 1.—Brass of Sir Robert de Septvans, A.D. 1306, Charthm, Kent.

Fig. 2.—Brass of John Strete, A.D. 1405, Upper Hardres, Kent.

* A paper by Mr. G. H. Smith, read before the Architectural Association Discussion Section, on Friday, November 3.

Me fieri fecit henricus oskens Cantor et Canonicus
huius ecclesie dum viveret orate pro eo
Obiit autem anno domini millesimo quingentesimo
Tricesimo quinto die vero ultimo nouembris

Fig. 3.—Brass of Henry Oskens, A.D. 1535, South Kensington Museum.

small piece of the "hard" or "medium" heelball and carefully rub all the outer edge of the brass, then to fill in the middle with a larger piece, as, having obtained the edging, there is not so much care required, and the rubbing is more speedily taken. The "soft" heelball is used where a very black rubbing is wanted and is not necessary if it is intended to black over afterwards with Indian ink. Before removing the rubbing go carefully over it, and make sure that every portion is reproduced clearly; this is of special importance in the details of vestments, ladies' dress, and inscriptions. A note should be made on the rubbing of the name of the person commemorated, date of brass, and the church where it is found.

When the brass is fixed vertically on a wall, it is much more difficult to deal with, the paper requires fixing with wafers, or to be held in position, which is a very trying operation and generally requires assistance from another person, but as a rule, except where the brasses have been shifted during the restoration of the church, they are fixed to the floor or on an altar tomb.

The oldest known brass now existing is that of a German Bishop, 1231, at Verden, and the oldest in this country is that before mentioned of Sir John Daubernon, 1277; while the latest known is that of Benjamin Greenwood, 1773, at St. Mary Cray, Kent.

A few words must be said about the kind of brasses known as "Flemish." They would seem to have been engraved on the Continent and brought over to England, being chiefly found in the Eastern Counties. A Flemish brass differs from the English brass by being rectangular in shape and having all the field of the brass filled in with engraving of a very ornamental type. A good example is that of Abbot Delamere at St. Alban's Cathedral. The one here shown, that of Henry Oskens, priest, 1535, is in South Kensington Museum.

A few brasses are known as French brasses, but it is not clear why they should be so called; of these a good example is that of Sir John Northwode and his wife at Minster Church, Sheppy.

At the end of the fifteenth century the floors of our cathedrals and parish churches must have presented a sight of great magnificence, covered as they were largely with the grand records of the past worshippers; but this splendour was short lived, the avarice and greed of the Royal thief, Henry VIII., and his minions, and the intolerant bigotry of the foreign reformers who flocked over here in the reign of Edward VI., who generally found the excuse of idolatry in anything that was of value in our churches, soon played havoc with the brass memorials of the faithful departed, and by the end of the Great Rebellion most of our larger churches had been spoiled of these treasures; and many that survived this period were torn up and sold by the churchwardens during the Georgian era. Under these circumstances, it is wonderful that we have some 3,000 to 4,000 brasses yet remaining, as well as that grand sight at Cobham Church, Kent, where are to be seen some nineteen of the finest brasses of the fourteenth and fifteenth centuries.

[The author then drew attention to the series of brasses exhibited as illustrations. We give reproductions of three of the most interesting of these.] Fig. 1 is that of Sir Robert de Septvans, at Chartham, Kent, and is the last known military brass of the reign of Edward II. This is a very fine brass though slightly damaged; the head and hands uncovered are considered to signify that the knight died a peaceful death; the legs crossed above the knee are supposed to denote that he was a Crusader who went through all three wars.* This brass is considered by some authorities to be of French manufacture.

Fig. 2 shows the brass of John Strete, at Upper Hardres, Kent. This is a specially interesting example of a bracket brass of the beginning of the fifteenth century, and shows Strete kneeling at the foot and praying to his patron saints, St. Peter and St. Paul, represented as standing upon the bracket.

Fig. 3 shows the Flemish brass of Henry Oskens, already referred to. This was originally at Nippes near Cologne, and is a fine Renaissance composition. In the centre is a representation of the Virgin and Child, and on her right stand St. Peter, with the Emperor Henry on the left. The South Kensington Museum authorities purchased this brass in 1866, for 20*l*.

It is much to be wished that architects would do more brass designing, and that the work, which has great possibitities, should not be left in the hands of the so-called "Art metal workers," who seem to lack entirely the power to grasp the spirit which is seen in the old examples, and only reproduce a lay figure, more or less accurate in drawing and correct in costume, but still without any life, which is such a marked feature of the early monumental brasses, and of which Shakespeare remarks ("Love's Labour Lost," act i., sc. 1):—

> "Let fame that all hunt after in their lives,
> Live registered upon our brazen tombs."

LIVERPOOL ARCHITECTURAL SOCIETY:

PRESIDENT'S INAUGURAL ADDRESS.

THE opening meeting of the Liverpool Architectural Society was held on Monday, in the Law Library, Liverpool, when the President, Mr. E. A. Ould, delivered an inaugural address. After some preliminary observations, the President said:—

The theme I have selected upon which to string the few observations I have to make to-night is one the importance of which I have always thought has been much under-rated, and it is one upon which, so far as I know, this Society has not expressed its views; but, in my opinion, it lies at the very root of all art in architecture. It is "The Cultivation of the true Condition of Mind." These seem empty words, and they only faintly express my meaning. I take it that most of us deplore the condition of art as applied to architecture at the end of this nineteenth century, *i.e.*, we deplore the absence of originality that we can admire, and we sadly admit that the best work that is done derives most of what is good and vital in it from the inspiration of greater men in other days. Why is it that the buildings of the Middle Ages, and even of the two succeeding centuries, surpass not only in excellence of design and detail, but also in harmony with their surroundings, the best *original* work of the nineteenth century? We cannot attribute this deterioration to any loss of intellectual power in the people, to any withdrawal of genius from the individual, to any lack of industry or opportunities of study or absence of ambition, but purely and solely to our inability to cultivate the true condition of mind.

And why are we not able? We have only to read the domestic life of the Middle Ages and study the habits and surroundings of the artists and designers of those times, and to compare all this with our own life in this nineteenth century, and we must conclude that if genius and poetry, and art and religion lived and grew and thrived and blossomed in the soil which those times supplied, a very different species of plant would be the product of the soil, and sun, and patent manure of the nineteenth century greenhouse. And such is actually the case. And what are the blossoms

* Some of our readers are probably aware that this signification of the crossed legs is questioned by many recent antiquaries.—ED.

we gather in our pride? Progress in science and mechanical invention—guns that will kill more people in one discharge than the English archers killed in a whole battle; Lyddite shells; trains that will run more miles—but you know the catalogue of them, and I verily believe that very few of them (outside medical science) add materially to the happiness of mankind; but they show clearly enough that intellect and genius have not died out among the races of Europe.

Then how about our invaluable and most necessary condition of mind? We cannot revive the good old days. Can nothing be done? By enumerating some of the difficulties which stand in the way of improvement we may perhaps see the remedy for some.

These are a few of them :—

1. Pace. (It is appalling to contemplate.)
2. Vicious surroundings. (We are steeped in them.)
3. Luxury. (It has brought down great civilisations before now.)
4. Local Restrictions. (Have we not Town Councils, County Councils, and Trades Unions?)
5. No Enthusiasm.

Pace.—We are all conscious of it and of the deleterious and paralysing effect it has upon our designing powers. We are all rush and dash. We have no time for study. We have long ceased to sketch old work. The most we do is to take snapshots at it with a Kodak. The life of some of us has become a series of "snapshots." Is this "rough and tumble" existence the congenial one for the artist? Read the story of the inception and design of one of our English cathedrals, the deliberation, the care — the designer seemed hardly to expect to see the completion of his work and scarcely one did—the models that were made for everything, no hesitation even about pulling down a month's work, if by doing so they could improve it. Read of Paul Vischer, the great Nuremburg sculptor, the friend of princes and nobles, toiling away early and late for twelve years with his five sons, producing the bronze shrine of St. Sebald. We should expect a Birmingham firm to turn out the same thing in six weeks. The donor was so pleased with the finished work that, in addition to the contract price, he presented the artist's wife with a beautiful hood—the fourteenth century equivalent for a new bonnet. Compare him with one of ourselves engaged upon a design in our office. Like him, we try not to forget that "we are building for all time," as G. E. Street used to say; we know that our "handwriting on the wall" may remain and be read for ages, and yet we attempt to work out and mature important designs in an atmosphere of worry and hurry and constant interruption. What are those bells which seem to call us—not the tuneful carillons from many steeples as of old, which might stimulate the imagination, but the telephone bell, the bell at the counter calling the office boy, the lift bell just outside, the electric tram bell in the street below, the thin plaintive bicycle bell warning perchance an old lady of her impending doom—nothing but "Bells, bells, bells," as Edgar Allan Poe sang. And then, when you have at last got hold of a really good idea and nearly five minutes' peace and quietness, and you think "you are going to do it this time," another bell—and in walks your client, who explains that "he has just dropped in to mention that he has changed his mind completely" in all the essential points of the design you have lately completed for him, and to which you have devoted a whole month of time (or rather fragments of time), and that he wants an entirely new design (of course, you will not charge for the first one) to be ready, without fail, by next Monday morning, or the whole thing may fall through, as he particularly wants to start building not later than the following Thursday, which is his wife's birthday, and she may, perhaps, be induced to lay the foundation stone. But if the estimate comes to a penny more than the (very inadequate) sum he mentions, he, in all probability, will not build at all. This is no imaginary picture, and who can wonder that our buildings do not always show marks of inspiration? You go back to your board, and you look at your budding design, which might have blossomed for the ages. But it has already shrivelled, the light has died out of your eager eye, and you think to yourself, "Is it worth while?" Why not go with the times? And the lady lays the foundation stone (your reputation's gravestone) on her birthday.

Vicious Surroundings.—Nothing is so plastic as the mind—not even putty. It takes impressions. The eye can be educated, but it is a slow process. It can lose what it has gained and become vitiated almost in an hour. A walk through the outskirts of Manchester, or even of Birkenhead, may do it, and a sensitive eye, which in pure surroundings might have seen visions fit for angels to look upon, becomes blind and vacant for all purposes of art. The suburbs of these great towns crush one. They are the very incarnation of vulgarity, and even a child cannot avoid contamination. The makers of corrugated iron have much to answer for. I think hell must be built of corrugated iron! And what a help, and check to moral degradation it is, to come across a bit of genuine old work in the midst of it all, or a good, honest, refined modern building, throwing its beams "like a good deed in a naughty world." But they are so few and far between that the impression soon dies away. I often envy the short-sighted man. His mind must be purer than that of the man of observation, and he can always put up his eyeglass, if he scents anything worth the trouble. The Psalmist was right when he sang, "If thine eye be single, thy whole body shall be full of light."

Luxury.—By this I mean want of simplicity, necessity for display and the consequent obligation to make as much money as possible. These all introduce a discordant element into the artistic life. If you must be fashionable in your attire, take your place in society, entertain everybody there and be entertained, attend those deadly afternoon parties, which Miss Fowler says ought only to be administered under chloroform—in a word, if you must do all that society (and your wife) expects of you, it is hopeless for you to attempt to follow the artistic life. You will take your position and earn the respect of your fellows, and that must content you. Of course, you do not wish to be laughed at. The fear of ridicule is one of the most powerful agents in the world, and it is nearly always exerted in a wrong and mischievous direction. You know the saying, "A man who has never made a mistake has never made anything." Well, I go further, and say "The man who has never made the world laugh has never made anything." Let them laugh on; they have laughed at better men than we. The tranquil, quiet life of the mediæval artist and craftsman, pursuing the even tenor of his way without hurry or bustle—industrious, but with life emptied of the vanities and jealousies and anxieties of a fashionable and commercial existence, and filled to the brim with art and aspiration—this is the life you must lead if you would cultivate the true condition of mind.

Local Restrictions.—You know them well, these municipal regulations and District Council decrees, administered by engineers and surveyors, who no doubt try to do their duty conscientiously, but who cannot be expected to possess much artistic knowledge or poetic soul; and they take your design in hand, and they mutilate it under the plea of the public health. "A mangle kept here" is their motto, for they iron out your shadows and shave off your projections and smooth away all individuality. There is no appeal, no sympathy. Every man's hand seems against you. You cry out, "Who is on my side, who?" There look out of the window two or three—allies; a Philip Rathbone, a William Forwood, or the welcome features of your late President, and with the aid of such men we hope some day or other to "throw her down," this Jezebel of Philistinism, and restore to our towns and villages their true character.

Lastly, *No Enthusiasm.*—In this material and matter-of-fact age enthusiasm seems out of place. People laugh at and despise it, and call it gush; but art cannot live without it. In the absence of enthusiasm all one's poetry becomes prose. It is the wave that lifts your bark and carries it above high-water mark. Some poet wrote—of a young woman, of course—"She's like the keystone of an arch, that doth consummate beauty; She's like the music of a march, that maketh joy of duty." "Maketh joy of duty." That is what enthusiasm does for us. Let the world laugh. Keep your enthusiasm as long as you can, it is harder as one gets older to be enthusiastic; but you will want it all if you are to surmount the almost insuperable difficulties that stand in the way of preserving the true condition of mind.

I have detained you long and I have done little more than point out some of the obstacles that stand, like lions, in your path. How can they be removed? They never will be completely removed in our day. All we can do is to try to shape our own individual lives so that they will be affected as little as possible by their vicious surroundings. Study—I am speaking to the younger members—study old work unceasingly; even the study of drawings of old work is not without its effect; but spend your holidays whenever practicable among the good old, unspoiled, unrestored monuments of past and better days. I have lately had the privilege of visiting Rothenburg, in Bavaria. "It is a wonderful revelation of tone possibilities," as they say of Franke's pianos. In colour as well as in architecture its streets are almost perfect, and serve to show what Nuremberg must have been before the process of modernisation began. And Rothenburg is struggling manfully to keep the old spirit alive, and to preserve the beauty and interest of her houses and public buildings. Her gateways, towers, and ramparts are to-day just what they were when America was discovered, except that time has laid on with lavish brush the auriole and emerald green which glorify their roofs and turrets. Twice a year Festival Plays are performed in the Rathhaus, illustrating the most stirring events in her history; and twice a week the town orchestra ascends to the top of the great tower of the Town Hall and plays a quaint chorale. You cannot make out where on earth the music comes from. It seems to drop from heaven.

To show the practical effect which such surroundings may have upon the individual, I cannot help mentioning a curious incident. In one of the streets of Rothenburg we came across a frame of photographs of more than usual merit, bearing the name of Rudolph Albrecht, Klostergasse, or Cloister-street; and after some search we found the house mentioned—a quaint little modern black and white dwelling jutting out of a corner of the crooked, irregular street, and we pressed the electric bell of curious wrought-iron work, and a man in shirtsleeves and with a ragged black beard and bright piercing eyes came to the door and bade us enter. This was Albrecht, and we passed through an oak door adorned with bright forged iron hinges of exquisite design, and found ourselves in a room which at once recalled Albert Dürer's dining-room at Nuremburg. Here was the same delightfully quaint panelling on the walls, relieved with little cunning recessed cupboards encrusted with the spreading wrought iron hinges and latches so familiar to us all. Even Albert Dürer's inlaid mediæval table was there, and a reproduction of the weird dragon lamp swung from the massive ceiling beams. On the little shelf terminating the panelling was a rare collection of choice old bits of china, glass, pewter, and copperwork, and lovely old German heraldic glass had been worked up with the roundels of the leaded casements. On Dürer's table were albums and photographs spread out for our inspection. We expressed our delight and surprise, and Albrecht explained, as well as a man could explain in a language of which he only knew six words and to visitors who only understood about eight of his, that he had been a travelling photographer for twenty years in Germany, the Tyrol, and Italy, and all the time he had been maturing his plans and collecting his treasures for the building and adornment of this house, which was to crown his days. Our enthusiasm kindled his and he almost shed tears of delight as he took us upstairs and showed his parlour and bedroom, each fit for a duchess, with one window looking down between the ranks of nodding gables which make up the Klostergasse, and another looking out towards the sunset over the valley of the River Tauber and the red towers of the town ramparts, both windows with curtains charmingly embroidered by the skilful fingers of his sister-in-law. The sun had almost set by the time we had grasped the meaning of the awful German word which expresses that relationship. Up in the roof was his own sanctum and studio, a little woodlined ark, the purlins of which formed shelves for further treasures. Nothing but genuine old furniture was here, and from this eyrie he looked upon the purple roofs and the blue sky, and the storks building their nests upon the Weisses Thor or "white gateway," and here he thought his great thoughts and cultivated the true condition of mind. Everything from roof to basement was in the best possible taste, both as regards beauty of

design and construction, and his own hands had made the panelling and the oak doors, and those deft, delicate fingers had forged the ironwork hinges and the filigree locks and the little cowhorn electric lamp that flared up to light us down the narrow stairs. But the light which flared up in those brown eyes, as we wrung his honest useful hand on the doorstep, and congratulated a plump but proud wife upon having such an artist for a husband, was a light which had been kindled many centuries ago, when these Bavarian towns were showing the world that the Crafts were as great as the Arts, and that the devotion expended upon the walls of a house, or even upon a door-knocker, was as truly art as that ever expended upon a canvas or a marble.

Well, we cannot all go to Rothenburg, but many other places are more accessible and almost equally valuable. Rouen is still beautiful, notwithstanding that a boulevard has been driven like a spear thrust through its vitals. Even Chester is worth studying, and going there from Birkenhead or Liverpool one feels like a fish coming to the surface to breathe. Keep out of the hurry and whirl of life as far as possible, and get away when you can among the hills and the heather. Do not let football or other forms of sport absorb too much of your interest, for the love of sport and the love of art do not seem to thrive together. And, as I am presuming to give advice, I would add, take full advantage of the University, which is an artistic oasis in the desert of Liverpool. Here you can live a part of your life in congenial surroundings among those who are sympathetically engaged in studying what you would fain study, and where painting and sculpture and architecture have found a home together and are building their nests above the storm and bustle of Liverpool, like the storks on the white tower of Rothenburg. In Professor Simpson you have a true friend, and whenever you are in any difficulty he will put you right. And those who have not the advantage of attending the University classes, know that the whole of the senior members of this Society are accessible, and I would say in the somewhat complacent words of the Prayer Book, "Let him come to me or to some other discreet and learned minister, and open his grief."

In conclusion, I may safely predict that it will not be given to most of us to build as the old fellows built, but we may do some work which will teach the world, if only our own little world, some lesson of simplicity, dignity and truth—some sermon in stones which will be preached every day, from dawn to sunset, far into the ages, when all human voices now engaged in preaching will be silent and forgotten. This is no ignoble destiny, and in our own quiet old age, the thought that we have fulfilled it worthily, will bring us more satisfaction than most other considerations.

THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

THE second meeting of the Discussion Section of the Architectural Association for the present session was held at 56, Great Marlborough-street, W., on the 3rd inst., Mr. W. B. Hopkins, the Chairman, presiding.

Mr. George H. Smith read a paper on "Monumental Brasses," the greater part of which is printed on another page.

The discussion was opened by Mr. H. Rose, who alluded to the fine series of Continental brasses shown in Creeny's great work, and mentioned as a singular fact that, whilst the earliest Continental brasses were those of ecclesiastics, in England they were those of knights. He also suggested for modern brasses the advisability of using gilding metal, composed of 9 parts of copper to 1 of tin, rather than using modern brass, upon which gas had such a serious effect.

Mr. Matt. Garbutt said he preferred bronze as a material, and strongly advocated following the simplicity of outline adopted in the early brasses, rather than the multiplicity of detail shown in the Flemish brass.

The President of the Association, Mr. G. H. Fellowes Prynne, pointed out the great value of the study of brasses in connexion with the history of costume, English ecclesiastical vestments, and printing, but feared its fascination tended to distract the attention of students from more purely architectural studies.

The Chairman mentioned some modern brasses, and objected to the removal of brasses from the position in which they were first placed.

Messrs. Weymouth & Satchell having asked some questions, Mr. W. Swinfen Harris, the special Visitor, summed up the discussion and gave many interesting details of brasses not illustrated, and spoke of the very fine brass monuments in Bruges and Vienna, and said that in modern brasses it is better to imitate well the work of our forefathers rather than create bad work of our own.*

ARCHITECTURAL SOCIETIES.

ARCHITECTURAL ASSOCIATION OF IRELAND.—At the meeting of this Association on the 7th inst. the following new members were elected: Mr. J. T. Rea; Mr. J. Norman Masterson; Mr. W. Henry Ward; and Mr. P. L. Dickinson. Mr. H. E. Tudman read a paper, as announced, on "Architectural Customs Two Hundred Years Ago." This paper, or a portion of it, we hope to be able to print in another issue.

COMPETITIONS.

CHURCH AND VICARAGE, CATFORD.—In the recent limited competition for a church, hall, and vicarage, the plans by Mr. Philip A. Robson, of Westminster, were placed first, and he has since been appointed architect. The hall is to proceed immediately.

ARCHÆOLOGICAL SOCIETIES.

ROYAL ARCHÆOLOGICAL INSTITUTE.—A general meeting of this Institute was held on the 1st inst., Sir Henry H. Howorth, President, in the chair. Mr. C. J. Praetorius exhibited a bronze celt found in the parish of Llangefni, Anglesey. It was found by a ploughman in the year 1856. There is no ornament or design on this implement; the only unusual point is that it is somewhat larger and heavier than many others of this type.—Mr. R. E. Goolden exhibited photographs of remains of pile dwellings at Hedsor, Buckinghamshire, and briefly described the work of excavation which was carried on this year.—Judge Baylis, Q.C., Treasurer of the Inner Temple, read a paper on two doorways and fragment of a staircase and arch recently found in the east wall of the Inner Battery of the Inner Temple, supposed to be part of the building occupied by the ancient order of Knights Templars and called the *Novum Templum*. He exhibited plans and photographs made by Mr. Frederick Downing, Surveyor of the Inner Temple, to illustrate his paper.—Mr. F. J. Haverfield, F.S.A., contributed a paper on the "Sepulchral Banquet on Roman Tombstones." The origin of the relief can be traced far back beyond Greece. A relief found in the Euphrates valley by Sir Henry Layard shows the King Assurbanipal reclining on a couch and holding in his hand a cup; in front is a small round three-legged table; near his feet is his queen seated in a chair, and at either end of the relief are servants waiting upon him. This form of relief was adopted by the Greeks for funeral monuments; but it is doubtful whether they interpreted them as banqueting scenes from real life, or as a funeral banquet, or as a banquet in Hades. From Greece this kind of relief passed to Italy, and diffused itself over the Roman world. Mr. Haverfield mentioned that many of this type found in Africa include figures of women reclining on a couch, and that those from the Rhine, Danube, and Britain are closely connected with the army, and largely, though not exclusively, used for the tombstones of women; but he was not able to explain why this form of relief was specially chosen for the tombstones of females. The conventional type of the Romans resembling the Assyrian original is a remarkable instance of the permanence of detail, which must have lasted in Asia and Europe for at least a thousand years. Mr. Haverfield also contributed a short paper on a Roman charm from Cirencester. Mr. W. H. St. John Hope, Mr. G. E. Fox, and Mr. Talfourd Ely took part in the discussions on these papers.

BRITISH ARCHÆOLOGICAL ASSOCIATION.—The first meeting of the Session 1899-1900 of this Association was held at 32, Sackville-street, Piccadilly, on the 1st inst. Dr. W. de Gray Birch, V.P., in the chair. A paper was read by Mr. C. H. Compton, V.P., on "The Recent Discoveries at the Tower of London." He said these discoveries were made last spring in the course of excavations for the new buildings for the use of the garrison, and include a quantity of stone, lead, and iron shot embedded in masonry, a flask of wine (supposed to be canary), many paving tiles, a block of Roman masonry, and four lengths of the flue of a hypocaust. At the time of the discovery it was suggested that the shot was a relic of "Sir Thomas Wyatt's" rebellion in the first year of Queen Mary's reign (1553), but an examination of the contemporary historians, Hollinshed, Grafton, and Stow, conclusively shows that Wyatt never attacked the Tower, that Harrison Ainsworth's account in his "Tower of London" of the siege by Wyatt was purely imaginary, and that the shot was more probably the result of the attack on the Tower by the Earls of March, Salisbury, and Warwick in 1460, during the wars of the Roses. The latter supposition was rather strengthened by an examination of one of the cast-iron shot (brought for exhibition with some of the other relics) which bears, sunken within a circle, but somewhat defaced, the letter H, surmounted by a crown. This might identify the shot as belonging to the reign of Henry VI. The shot is of cast iron, about the size of a cricket ball. The Roman remains discovered were partly on the site of the Cold Harbour Tower, on the south-west side of the White Tower, and taken in conjunction with the portion of the Roman wall which was discovered near, in 1887, on the south-east, are a valuable confirmation of the tradition that there was a Roman occupation of the site of the present Tower of London.—Mr. Allen S. Walker read a paper upon the "Guildhall Porch," in the course of which he said a Guildhall was thought to have been in existence in the time of Edward the Confessor; if so it was situated most probably in Aldermanbury, where the Guildhall was prior to the fifteenth century. The arms of the Confessor figure in the crypt and porch of the Guildhall. The present building was commenced in 1411 and completed in 1439. The porch was built in 1425-6. The Great Fire of 1666 left the walls of the great hall standing, also the porch, which is a fine example of Perpendicular Gothic, having panelled walls and groined and vaulted roof, the filling in between the ribs being of chalk. The bosses at the intersection of the ribs bear the arms of Edward the Confessor and Henry VI. At the present time the porch may be seen in much the same condition as it was left after the Great Fire, the stonework showing distinctly the marks of the flames. It is to be hoped that the contemplated "restoration," at an estimated cost of 250*l.*, will not obliterate these interesting memorials. It is said that during the fire the interior of the porch burned "like a bright shining coal, as if it had been a palace of gold or a great building of burnished brass."—Mrs. Collier submitted for exhibition a boxwood nutmeg-grater, nicely carved in the form of a lady's shoe, the sole being of metal, forming the scraper; it is of foreign make and of the latter half of the last century. The hon. secretary announced that Mr. Chas. Lynam, F.S.A., had accepted the office of hon. treasurer of the Association, in succession to Mr. Thomas Blashill, who had resigned. The Rev. H. J. D. Astley, editorial secretary, gave a brief *resumé* of the antiquarian discoveries during the recess.

* Unquestionably; but why not create *good* work of our own?—ED.

BOOKS RECEIVED.

CHIMNEY DESIGN AND THEORY. By William Wallace Christie. (E. & F. N. Spon.)

A TREATISE ON SURVEYING. By Reginald E. Middleton and Osbert Chadwick. (E. & F. N. Spon.)

BUILDING CONSTRUCTION FOR ENGINEERS. By J. W. Riley. (Macmillan & Co.)

EXERCISES IN GRAPHIC STATICS. By G. F. Charnock. Vol. I. (J. Halden & Co.)

STORIES FROM OLD-FASHIONED CHILDREN'S BOOKS. Selected by Andrew W. Tuer: with 250 cuts. (The Leadenhall Press.)

FIFTY UNPUBLISHED PEN-AND-INK SKETCHES. By *Phil May*. (The Leadenhall Press.)

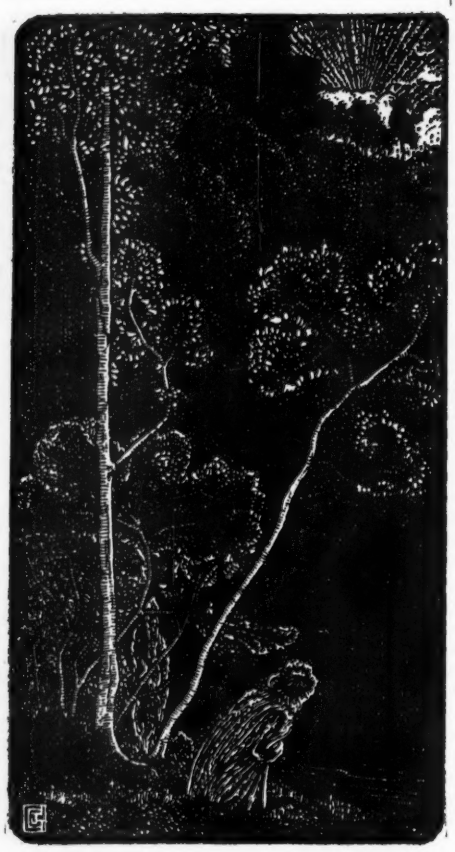
LLOYD'S-AVENUE, E.C.—This new thoroughfare, laid out by Messrs. Davis & Emmanuel, and leading from Fenchurch-street to Crutched Friars, will shortly be opened by the Lord Mayor and Sheriffs. It is 40 ft. wide and affords a direct approach to the Tower Bridge and the docks, passing over the site of some old warehouses in Crutched Friars that had remained vacant for some time.

Illustrations.

COLCHESTER TOWN-HALL: DETAILS OF FACADE.

WE give here a reproduction of the large-scale detail drawing of a portion of the façade of the new Town-hall at Colchester, designed by Mr. Belcher.

The drawing sufficiently explains itself. We may observe that it was exhibited at the last Royal Academy, and that it represents a type of drawing which we wish was more often represented in the architectural room, in place of some of the mere picturesque representations of buildings which generally form the bulk of the collection.



"Castle Wonderful"; from Illustrations to THE ELF. *(Mr. Jas. J. Guthrie.)*

Printer's Mark from THE ELF. *(Mr. J. J. Guthrie.)*

ILLUSTRATIONS FROM THE ARTS AND CRAFTS EXHIBITION.

OF the illustrations given on the first plate, Nos. 1 and 2 are from photographs of sgraffitto decoration carried out by Mr. Heywood Sumner at the church of All Saints, Ennismore Gardens. The photographs are exhibited at the Arts and Crafts, but not the actual cartoons of this portion of the work; the large cartoons in the central hall, Nos. 510, 512, represent however a continuation of it. It was not possible to obtain photographs of these latter at present.

Nos. 3, 4, and 5 on the plate are cartoons by Miss Mary J. Newill for a three-light window representing "Queen Matilda Working the Bayeux Tapestry." The windows are being carried out by the Bromsgrove Guild of Art Workers.

Nos. 6 and 7 are also by Miss Newill, and are two of the best things in the exhibition. They are panels in embroidery and appliqué work, illustrative of the "Faërie Queen," and though unfortunately hung separately at the exhibition, it will be seen that they really form a continuous design, the lines of the landscape running through from one to the other. They are intended to fill two contiguous panels in a room, separated only by a band of dark oak about 4 in. wide. On the right hand we have the outskirts of the "wandering wood" through which the Redcross Knight and Una have passed, on the left hand we see them making their way up to the House of Holiness. The artist has most happily expressed in these designs the spirit of "glamour" which runs through Spenser's poem.

Nos. 8 and 9 are designs for wall-papers made by Mr. Allan F. Vigers for Messrs. Jeffrey & Co., and carried out by them.

In the second sheet the fireplace in the centre at the top was designed by Mr. Geo. Jack for the Falkirk Iron Company, by whom it is made and exhibited. As we mentioned in our review of the exhibition, it is a very good example of design for cast-iron work. It stands in the central hall, where also is to be seen the graceful columned fireplace, on the left of the plate, designed by Mr. W. A. S. Benson, also for the Falkirk Iron Company, who are setting an excellent example to manufacturers in thus going to real artists to design work of this kind. The grate front on the right is designed by Mr. Allan F. Vigers, and executed by Mr. T. Rolls.

The leaden bowl and the two flower-pots are examples of the decorative treatment of lead-work, designed by Mr. F. Inigo Thomas, and executed by Mr. W. Dodds.

The eagle lectern is designed and the eagle itself carved in oak by Mr. George Jack, and exhibited by him. It is a forcible piece of work, and forms an instructive contrast to the brass pattern eagles produced by "ecclesiastical art" manufacturers and seen in too many of our churches. The stand, which also has a good deal of character, is by Mr. A. L. Turner. The silks and wall-paper design at the foot of the plate have, owing to a misapprehension, been attributed on the plate to the wrong artist; they are not by Mr. Vigers, but by Mr. Archibald H. Christie. The two silk designs, the right hand one of which is especially good, were designed for and are executed by the English Silk-weaving Company. The wall-paper, designed by Mr. Christie, is executed by Mr. Shand Kydd.

Among the exhibits in the balcony is a frame of proofs from illustrations and decorations of a book, "The Elf," by Mr. J. J. Guthrie. Two of these are given on this page.

ROOMS IN THE HÔTEL DE L'EUROPE.

THE illustrations show the interior of the general Café on the ground floor of the new Hôtel de l'Europe in Leicester-square, and that of the "Brasserie" or beer saloon in the basement.

The Café is treated in Germani Renaissance style. The ceiling and walls are in decorative fibrous plaster, the panels on the walls being formed either of mirrors or pictures, the pictures representing historic events in German history. The dado is of oak. The festoons between the columns are of repoussé copper, forming garlands of artificial leafage, with the fruit represented by electric lamps.

On the north side of this room is a minstrel gallery with a counter under of carved oak. The balustrading of the gallery is of wrought iron.

The Brasserie, in the basement, is decorated in Moorish style; the decorations on the ceiling and walls are of fibrous plaster, and the walls panelled out and filled in with mirrors. The dado is in Campan white-veined and Belgian black marble.

The decorations of the German café, as well as those of the entrance hall, staircase, French room and Italian room have been carried out by Messrs. Goodall & Co., and those of the Brasserie by Messrs. Maple & Co. Mr. Walter Emden is the architect.

ST. MARK'S, WHITECHAPEL.—An appeal is made for contributions towards a sum of 3,500*l.* for carrying out some necessary repairs to the fabric of this church, built in Goodman's-fields sixty years ago, and of which we understand the steeple has been taken down, as being in a dangerous condition.

MAGAZINES AND REVIEWS.

THE *Gazette des Beaux-Arts* includes an interesting criticism on Donatello by M. E. Bertaux, who emphasises the Renaissance or "new life" element in the work of the sculptor, whom he regards as much more allied to the Renaissance than to the mediæval school, especially in his love for the nude figure and his little-disguised paganism. The children whom he introduces everywhere, "Comme une signature," as M. Bertaux observes, are not angels but Cupids. Professor Müntz is making an artistic pilgrimage through Suabia, the second instalment of it appearing in this issue of the *Gazette*. Speaking of Ulm Cathedral, and while expressing little sympathy with its exterior architecture, he devotes a good deal of space to the fine stalls by Syrlin, who flourished from 1458 to 1512. Among the busts of classic personages with which the stalls are adorned, that of Virgil, of which an illustration is given, is a remarkably bold and characteristic piece of wood-cutting, with a curious kind of mingling of Mediæval and Renaissance feeling.

In the *Art Journal* Mr. E. F. Strange writes a short but forcible article, under the title "Handicraft and the Life of the Craftsman." The point of it is the value of home-made work as giving an interest to life. Mr. Strange says what is perfectly true—that to understand and enjoy the higher arts culture is necessary, and that the effort of well-meaning persons to raise the moral standard of the lower orders by setting before them pictures and sculpture which they do not really understand is a delusion. But set them to make hand-made furniture and textiles, and they would enter on an art they could understand and would learn to develope further. The London Club described this month is the "Royal Societies" in St. James's-street, but we no not quite understand the statement that the whole of the remodelling and designing of the interior of the building, at a cost of 20,000*l.*, is due to Mr. Lewis W. Poole, the Hon. Secretary. Are we to understand that no architect was employed?

The Christmas number of the *Art Journal* is devoted to the life and works of Mr. Peter Graham; the literary portion by Mr. W. M. Gilbert. The numerous studies illustrated show what hard work the artist went through to acquire his facility and completeness in the treatment of his two pictures—for he has practically only two—first-rate of their kind, only one sees them too often.

The *Studio* (October 16) introduces the work of a modern Italian artist not much known here, Signor Fragiacomo, a painter mostly of coast scenes and sea and shipping; his works impress one very favourably in the illustrations given. In the article on "Some Alterations and Additions to a House in Glasgow" Mr. Horace Townsend maintains the position that the altering architect should do just what he likes best irrespective of the style of the house, as he certainly seems to have done here, judging by the illustrations of work put into what is described as being a conventional neo-Classic town house, on to which the oddities and eccentricities of the new school have been affixed. The truly artistic spirit would be shown in following out the main style of the house but giving a little special refinement and finish, and a little variety, to the added details, not in thrusting in something in the fashion of the moment, and which merely looks absurdly out of place.

In the *Antiquary* Miss Isabel Robson's series on "England's Oldest Handicrafts" deals with "Workers in Wood." Among other articles is one on "The Founding of St. John's College, Cambridge," by Mrs. Clay Finch.

The *Berliner Architekturwelt* includes among its illustrations some rather wild but novel and original designs for wrought-iron work. The architectural illustrations, exteriors and interiors, present nothing suggesting remark.

Innen-Dekoration is the title of another German illustrated publication hailing from Darmstadt, and which, as its name implies, is concerned with the decoration and treatment of interiors. The illustrations consist of two or three photographs of furnished interiors, various line-elevations of sides of rooms, of a rather coarse character, and some terrible furniture designs. A copy has been sent to us, but it is a publication perfectly valueless to English architects or decorators.

The *Architectural Record* issues No. 6 of its

"Great American Artists" series. The assumption that so many American architects are "great" is quite in keeping with the usual tone of American writers in speaking of their own artists, and we do not know that we should call Mr. Charles C. Haight, to whose works this issue is devoted, quite a great architect; but, taking the collective illustrations of his works here given as a basis, we should say that he was an architect whose works are characterised, if not by special originality, by good taste, good sense, and refinement.

The *California Architect and Building News* devotes a special number, under date of September of this year (but which has only just reached us) to description and illustration of the selected design in the great competition for the California University.

In the *Engineering Magazine* the subject of "Standardising in Engineering Construction," by Sir Benjamin Browne, is continued, the present chapter dealing with "the advantages of specialisation in design, manufacture, and sale of products." The line of the article may be inferred from the following quotation :—

"Probably one of the most important things to impress on the young manufacturer—or, for the matter of that, on all young engineers—is, that whatever they sell ought to be the best possible article for the purpose for which it is intended; not necessarily the best possible article in itself, because an article may be too costly for its special purpose. If it is only to be used rarely, or for a short time, it is no use spending money to give it a finish, or a durability, which would be very properly applied to work of a more permanent character.

"For example, on public works, cranes, roads, and other things are put up which will very likely be swept away, or thrown on the scrap heap, at the end of a year or two. Now, a man might find it his business in life to make cranes of a transitory character for public works, and, if so, to make them quickly and cheaply and so as to be easy of erection, which would be more important than to make them thoroughly durable."

We are also reminded, in the course of the article, how vastly many more nails a man can make in a day, if he does nothing but nails, than any smith could make who was asked to make nails as an extra and special job. All that is true; that is part of the economy of production; but at what a cost to the workman! The loss of character, individuality, and enjoyment in his labour. That, however, is what the modern Juggernaut of production demands, and there seems to be no help for it—go the pace or drop out.

Feilden's Magazine includes articles on "Machine Tools," "Acetylene Generators" (a subject of considerable practical interest just now), and the Great Central Railway. Among minor matters we notice a description and illustration (page 483) of a new chain, the Jefferys-Appleby chain, which is composed of cruciform links, the arms or flanges frictionally engaging in the inclined sides of a grooved pulley, so as to get a stronger frictional grip on it.

An article entitled "London Revisited" in *Macmillan*, by Mr. Charles Whibley, is both very picturesque in style, and is interesting as an impression of London on a person who has apparently been long absent from it. The article is a wise and sensible one, and should be studied by those who are concerned about the outward character of our capital. The writer has much admiration for London as a city, but finds it deteriorated in certain aspects. The plate-glass window "has everywhere ousted the trim square and modest sash"; consequently the shops "are so wofully disturbed by a set of cross-reflections that the worried eye can hardly look through the superficial glitter to the wares displayed within." The posters of London are a constant shock to the returned wanderer. And then London is "duskier than of yore"—and why?

"The truth is that the houses of London are growing loftier and are casting longer shadows. The passion for flats, combined with the greed of landlords, is more resolutely excluding the sun from our streets. The extravagance which once gave even the poor man a cottage to himself in the midst of a great city was not merely a declaration of independence. True, the Englishman's house is his castle, and it was his castle in London not that the accuracy of a proverb might be demonstrated, but because, where every ray of sunlight must be caught, the roofs should not touch the sky. London, in fact, ought always to remain a city of low houses. A southern town delights in many stories and a narrow street, for it provides a shelter from the sun as well as a path for the traveller. But London is not too rich in light, and it is forced, moreover, to fight the fog from November to March. Three or four stories' then, and a wide road are London's reasonable necessity, which is clean forgotten by those who, sacrificing amenity to gold, would build their blocks as high as those *insulæ* which darkened the sunlit spaces of ancient Rome."

Yet, in Mr. Whibley's opinion, "the folly of councils and architects cannot abolish the immemorial grandeur of our capital."

"Moreover, London for two reasons is superior to Paris as it is superior to all cities in the world. It is inhabited by Englishmen, and through it flows the incomparable Thames."

Scribner contains an article which is amusing in a way, on "Pictorial Photography," by Mr. A. Stieglitz, "illustrated by the author's photographs"; *i.e.*, this is an article to prove that the author, with his photographic treatments, is truly an artist. We fear Mr. Stieglitz does not succeed, any more than others, in convincing us that photography is an art in any sense in which water-colour, for example, is an art. He proves that there a great many "dodges" for faking up a photograph into an imitation of a drawing—and we knew that before. His print, "At Anchor," a "gum print" on rough Whatman paper, has the look, no doubt, of a monochrome brush sketch; but it is the paper that does it; it is nothing better than a clever trick.

In *Harper* the article by Mr. Sylvester Baxter on "Boston at the Century's End" is an interesting pen and pencil sketch of the city which is understood to be the centre of American culture. There appear to be still some of the old-world streets left in Boston, and some of the illustrations look more as they came from an English than a United States City.

The *Century* includes an article on "The Making of a Mural Decoration," written by Mr. Royal Cortissoz, the subject being a painting by Mr. Robert Blum for the Mendelssohn Glee Club (we presume in New York). This is the usual demonstration of the process of preliminary studies &c., unfortunately pervaded by that exaggerated tone in which all the doings of American artists are spoken of in American magazines. Mr. Van Dyke's remarks on Crome ("Old Crome"), accompanied by two of Mr. Cole's excellent wood engravings, show a sober critical judgment, not without enthusiasm. An illustrated article on "Wagner from behind the Scenes," by Mr. Gustav Kobbé, where we have representations of the Valkyrie on their wooden horses ready to be pulled through the clouds, of Siegfried splitting the anvil at its ready-made joint, of the means of propelling the dragon &c., forcibly exemplifies what a hollow and childish kind of performance romantic opera really is, as soon as you look into the ways and means of things.

The *Nineteenth Century* contains a good critical article on Van Dyck, *apropos* of the Antwerp Exhibition, by Mr. Claude Phillips.

Knowledge contains an article on a subject of some artistic interest—"Shells as Ornaments, Implements, and Articles of Trade;" one on the subject of "Ups and Downs in our Daily Weight," which is of some practical interest to all of us; and (passing from the microcosm to the macrocosm) another on that fascinating though almost unthinkable subject, before touched on in *Knowledge* by the same writer—"Is the Stellar Universe Finite?" The article is very interesting as a subject of thought. Mr. Burns seems to think that if we adopt the theory of a finite universe, we are faced by many questions it is impossible to answer. After mentioning some of these (for which we refer the reader to his paper), he adds "Perhaps the real solution of the difficulties thus presented by a finite universe is metaphysical. The human intellect is so framed that it can only conceive space as infinite, and yet can form no conception of infinite space. Possibly space without limit is a mental illusion." This latter suggestion we have heard before, if we mistake not, in the course of a lecture from Sir Robert Ball, the Astronomer Royal for Ireland.

Moring's Quarterly, which continues its series of articles on "Greek Terra-cotta Figurines," gives also some specimens of book-plates in black and white line, designed by Mr. Gordon Craig—very simple but with a certain character about them.

We have received also the *Revue Générale*, the *Pall Mall Magazine*, the *Gentleman's Magazine*, the *Quarry and Builders' Merchant*, and the *Genealogical Magazine*. By an odd coincidence, the latter magazine describes and illustrates the brass of Robert de Septvans in Chartham Church, which is described and illustrated on another page of this issue, in connexion with the paper on "Brasses" by Mr. G. H. Smith.

SANITARY INSPECTORS' ASSOCIATION.

At an extraordinary general meeting of this Association, held on Saturday last at Carpenters' Hall, London Wall, the new Chairman of the Council, Mr. W. H. Grigg (Fulham), delivered his opening address. The leading subjects which were occupying the attention of sanitary inspectors were touched upon, particularly the efforts to get passed through Parliament the "Qualification and Tenure of Office Bill," which was receiving the support of many influential members of Parliament; and, in conjunction with the Incorporated Society of Medical Officers of Health, the effort to obtain an amended Medical Officers of Health Superannuation Bill. Among the M.P.s who were backing their Qualification and Tenure Bill were Sir Walter Foster, Sir H. H. Bemrose, Major Rasch, Captain Chaloner, Mr. Atherley Jones, and Mr. Percy Thornton, and it was hoped that it would be introduced into the House immediately on the re-assembling of Parliament. It was gratifying to him to be able to report to the meeting that they were receiving the hearty support of members of every shade of political opinion, and as he had undertaken certain special responsibilities with regard to securing the passing of the measure into law, he appealed to all members of the Association throughout the country for their support and hearty co-operation. If they all put their shoulders to the work, an early success might fairly be anticipated. The great benefit they would derive from the passing of the measure was that thereafter no sanitary inspector could be dismissed without the sanction of the Local Government Board.

Former efforts to secure the co-operation of the Medical Officers of Health in favour of a Superannuation Bill had not been very successful, but the Incorporated Society had now resolved to ask the British Medical Association to amend their draft Bill so as to include sanitary inspectors as well as Medical Officers of Health, and although he hoped their own Bill for this purpose would be proceeded with, there would, he felt sure, be every desire on the part of members of that Association to arrive at a satisfactory joint mode of action.

Another object they must continue to aim at was to get into closer touch with that excellent institution, the Sanitary Institute of Great Britain. A closer association would be of mutual advantage in sanitary work. The new Examination Board for sanitary inspectors had begun its work, but he regretted to say that nothing had been done, as they had been led to hope would be the case, to include even one inspector on the Board. The efforts of Mr. Moss-Flower to put the scheme for a benevolent fund on a satisfactory basis would be from time to time referred to, and while he hoped that none of their members would ever need to seek aid from that fund, he commended it to their support. Referring to the Exhibition held at Lincoln in connexion with the last Annual Provincial Meeting, they would all be glad to learn that, after settling all accounts, a clear profit of 250*l.* had been realised.

A vote of thanks was proposed by the Hon. Sec., Mr. E. Tidman, and in the discussion which arose, Mr. Moss-Flower (Bristol), Mr. West (Walthamstow), Mr. Potter (Plumstead), and other members took part. In reply to a question, the Chairman explained that the members had not been consulted about the proposed benevolent fund, as the matter was really outside the work of the Association, although it had been taken up by one or two gentlemen who were members of the Association.

Mr. Moss-Flower confirmed this, but said that any member of the Association on becoming a subscriber to the fund would have a voice in the matter. It would be impossible to make membership of the fund compulsory upon members of the Association, for there were cases where men could not perhaps afford a contribution of five shillings. He suggested that in offices where a number of inspectors were employed a joint contribution of 6d. or 1s. per man might be contributed, such office arrangements being made as might seem advisable for mutually dividing the benefits.

Mr. West referred to the change which had

been made in the constitution of the Association, to meet the desire of members of provincial associations to become affiliated to the Sanitary Inspectors' Association. To facilitate this it had been decided to return, in cases where it was necessary, a maximum of two-thirds the amount of the annual subscription.

The resolution was carried by acclamation. Mr. Grigg briefly replied, and the meeting terminated.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring Gardens, Lord Welby, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee it was agreed to lend the Vestry of St. Margaret and St. John, Westminster, 9,000*l.* for enlargement of vestry offices, and the Guardians of Stepney Union, 1,535*l.* for additions to the Ratcliff Workhouse.

Electrical Generating Station.—The Highways Committee reported:—"Mr. Kennedy, F.R.S., the expert electrical engineer who is advising the Council with regard to the schemes for the construction of electrical tramways and light railways, has expressed the opinion that the whole of the Council's tramways on the south side of the Thames, and also the additional tramways and light railways which it is seeking powers to construct, could be worked by means of one generating station, which could be constructed on the site of the Council's tramway depôt at Camberwell. Part of the depôt is the Council's freehold, while the remainder is held on a lease, of which about seventy-five years are unexpired, at a rent of 250*l.* per annum. Mr. Kennedy also suggests that, as eventually this generating-station, if erected, would be an extremely important one, and it is impossible at present to estimate the ultimate growth of the electrical traction scheme upon which the Council is entering, it is very desirable that compulsory powers should be obtained for the acquisition of the freehold of the portion of the depôt now held on lease, and also of certain houses abutting upon the north-east corner of the depôt, and the property on the east between the depôt and the Camberwell New-road." Upon this report, the committee recommended an application to Parliament for the necessary powers. They estimated the cost of the scheme at 90,000*l.*

The recommendation was adopted.

Housing Scheme, Southwark.—The Housing of the Working Classes Committee reported as follows, the recommendation being agreed to:—

"We submit the working drawings, specification, bills of quantities, and estimate in respect of the dwellings to be erected on the site in Southwark which abuts upon Green-street and Pocock-street. The plans of these dwellings have been approved by the Local Government Board, who will accept the dwellings as providing, with those now being erected on the Borough-road site, accommodation for the 500 persons required to be provided for under the Falcon-court scheme. The Green-street and Pocock-street dwellings will be five stories in height, and will accommodate 278 persons, in one tenement of one room, thirty-nine tenements of two rooms, and twenty tenements of three rooms. The architect's estimate of the cost of the buildings amounts to 12,664*l.*, and of the cost of architect's services, clerk of works' wages, quantity surveyor's charges and incidentals to 700*l.* The manager of works has reported that he is prepared to undertake the work of erecting the dwellings at the amount of the architect's estimate of 12,664*l.* We have forwarded the necessary estimate to the Finance Committee, and have given them the information required, in order that the effect upon the county rate may be calculated. We are advised that the erection of the dwellings will not involve any charge in this respect. We recommend—That the working drawings, specification, bill of quantities, and estimate of 13,364*l.* submitted by the Finance Committee in respect of the dwellings to be erected on the Green-street and Pocock-street site, Southwark, be approved; that the work of erecting the dwellings be carried out by the Council without the intervention of a contractor; and that the working drawings, specification, bills of quantities, and estimate of 12,664*l.* be referred to the manager of works for that purpose."

Improvement, Whitechapel.—The following recommendation of the Improvements Committee was agreed to:—

"That the estimate of 2,050*l.* submitted by the Finance Committee be approved, and that the Council do contribute on the usual conditions one half of the net cost of the acquisition by the Whitechapel District Board of Nos. 1, 2, and 3 Bell-lane, and Nos. 1 and 2, White's-row, such contribution not to exceed 2,050*l.*, and to be made subject to the District Board agreeing not to deal with any of the said properties, except No. 1, White's-row, until the Council shall have laid down the line of widening of the road."

London Water Supply.—The Water Committee submitted a long report on the question of the Metropolitan Water Supply, and after discussion, and the rejection of two amendments, the following recommendations were agreed to:—

"(*a*) That a Bill be promoted in the session of 1900 for the purchase by the Council of the undertakings of the eight metropolitan water companies upon similar lines to those of the Bill presented to Parliament in the last session.

(*b*) That a Bill be promoted to enable the Council to obtain and to introduce into London an additional supply of water from the watersheds of the Wye and the Towy.

(*c*) That it be referred to the Parliamentary Committee to prepare and present to the Council the necessary Bills for carrying out the above recommendations, including the preparation of the necessary Water (Finance) Bill."

District Surveyor for North Battersea.—The Building Act Committee recommended, and it was agreed, that consent be given to Mr. H. J. Hansom, the District Surveyor under the London Building Act, 1894, for the district of North Battersea, to appoint as his deputy Mr. J. A. J. Woodward, of No. 69, Kennington-oval, to perform all the duties of such District Surveyor for the period of six months from November 10, 1899.

Separation of Buildings.—The same Committee also reported:—

"We reported on June 20, 1899, that a decision had been given by the Divisional Court in the case of Carritt *v.* Godson, to the effect that the provisions of Section 74 (2) of the London Building Act, 1894, did not apply to the premises then in question, which were premises licensed for the sale of intoxicating liquors. We have recently had under consideration a case in which it is proposed in rebuilding the 'Regent Arms' public-house, No. 53, Regency-street, to omit fire-resisting separation between the portion of the premises to be used for trade and the portion to be used as a dwelling-house, which fire-resisting separation is required by Section 74 (2) of the Act for 'every building exceeding ten squares in area used in part for purposes of trade or manufacture and in part as a dwelling-house.' The builder having given notice to the District Surveyor of his intention to omit this fire-resisting separation, under the advice of counsel a notice of objection under Section 150 of the London Building Act was served by the District Surveyor upon the builder, who appealed to a magistrate against the notice. The magistrate allowed the appeal, and refused to state a case for the opinion of the High Court. After consulting counsel we consider that the decision in the case of Carritt *v.* Godson does not conclude the question at issue in the present proceedings, and that an application should therefore be made to the High Court for a mandamus to the magistrate to state a case. We recommend:—'That the solicitor do apply to the High Court for a mandamus to the magistrate to state a case for the opinion of the Court upon his decision with regard to the appeal of the builders against the notice of objection served by the District Surveyor, to the proposed rebuilding of the 'Regent Arms' public-house, Regency-street, Westminster.'"

The recommendation was agreed to.

Underground Conveniences, Blackheath.—It was agreed to accept the tender of Messrs. R. Harding & Son, for the construction of an underground urinal on Blackheath, near South Row, in accordance with the specification prepared by the architect, for the sum of 556*l.* 19s. 1d.

Theatres, Music Halls, &c.—The following recommendations of the Music Halls Committee were agreed to subject to certain conditions:—

"That Mr. W. Hancock be informed that the Council has no objection, so far as its regulations under Section 12 of 41 and 42 Vict. cap. 32, are concerned, to the arrangements shown on the two plans, dated October 26, 1899, submitted by him in regard to the Balham Baths. . . ."

"That Messrs. Wylson & Long be informed that the Council has no objection, so far as its regulations under Section 12 of 41 and 42 Vict., cap. 32, are concerned, to the arrangements shown on the plan, dated October 30, 1899, submitted by them in connexion with the South London Music-hall. . . ."

"That Mr. R. Oliver be informed that the Council has no objection, so far as its regulations under Section 12 of 41 and 42 Vict., cap. 32, are concerned, to the arrangements shown on the two plans, dated October 18, 1899, submitted by him in connexion with the St. Mary's Mission-hall. . . ."

"That Mr. Venner be informed—That the Council has no objection, so far as its regulations under Section 12 of 41 and 42 Vict., cap. 32, are concerned, to the erection of the store shown on the two plans, dated October 27, 1899, submitted by him in connexion with the Royal Agricultural Hall. . . ."

"That Mr. W. G. R. Sprague be informed that the Council has no objection to the proposal contained in his letter of October 20, 1899, with reference to Wyndham's Theatre, so far as its regulations under Section 12 of 41 and 42 Vict., cap. 32, are concerned. . . ."

"That Mr. W. S. Ash be informed that provided the works shown on the six plans, dated October 30, 1899, submitted by him in regard to a building to be known as the Campbell-road Mission Hall, and to be erected at Campbell-road, Seven Sisters-road, Holloway, be commenced within six months, the Council will be prepared to grant a certificate under Section 12 of 41 and 42 Vic., cap. 32, in respect of such building. . . ."

"That Mr. W. G. Silcock be informed that, provided the works shown on the six plans, dated October 21, 1899, submitted by him in regard to a building to be known as the 'Star and Garter Hotel,' and to be erected at Putney, be commenced within six months, the Council will be prepared to grant a certificate under Section 12 of 41 and 42 Vict. cap. 32, in respect of such building. . . ."

"That Messrs. Palgrave & Co. be informed that, provided the works shown on the eight plans, dated October 23, 1899, submitted by them in regard to a building, to be known as the Theatre Royal, to be erected at Belsize-road, Kilburn, be commenced within six months, the Council will be prepared to grant a certificate under Section 12 of 41 and 42 Vict., cap. 32, in respect of such building. . . ."

The Council soon after adjourned.

METROPOLITAN ASYLUMS BOARD.

THE fortnightly meeting of the Managers of the Metropolitan Asylum District was held on Saturday at the County Hall, Spring Gardens, Sir E. H. Galsworthy, the Chairman, presiding.

Caterham Asylum.—The Works Committee reported that the total cost of the erection of the female attendants' home at this asylum had been 5,548*l.*, the amount sanctioned by the order of the Local Government, dated August 4, 1897, being 5,790*l.*

High Wood School.—The Works Committee reported that they had consulted with the Children's Committee as to the suggestion of the Local Government Board that an elongated type of cottage should be adopted for this institution in place of the square cottages originally designed, and also that the drains of the separate blocks should be kept aërially distinct. As a result the Committee was in entire concurrence with the Local Government Board, and the architects, Messrs. C. & W. Henman, had amended the block plan so as to give effect to the suggestion, the adoption of which, it was estimated, would result in a considerable saving. Other improvements had been made in the plans, and it was agreed, on the recommendation of the Committee, that the amended block plan should be forwarded to the Local Government Board for their formal sanction under seal.

Southern Hospital.—Since the last meeting of the Board, the Works Committee had held a conference with the Hospitals Committee upon the proposal of the Local Government Board that two-story instead of one-story cottages should be adopted at the proposed Southern Hospital for the accommodation of the 720 ordinary patients, and Mr. James Brown, Chairman of the Committee, now moved the adoption of their recommendation, which was agreed to, that the Managers should adhere to their decision to adopt single-story cottages, but to increase the unit of accommodation from twelve to fifteen. Preliminary plans for the hospital were adopted in March, and in June drawings of the foundations, with the estimate of Messrs. Treadwell & Martin, the architects, of the approximate cost of the buildings, amounting to 227,554*l.*, were adopted and forwarded to the Local Government Board. Owing to the heavy cost of the proposed buildings, the Local Government Board suggested two-story cottages, a plan which Messrs. Treadwell & Martin estimated would save (including the drainage) about 9,200*l.* As the sub-division of patients and staffing of the hospital was arranged on a one-story basis, the committee considered that a much greater saving would be effected by increasing the unit of accommodation of the single cottages from twelve to fifteen beds. There

would then be twenty-four double cottages instead of thirty, giving a saving in building, road-making, and draining of 30,000*l.*, and the reduction of the staff by twelve house-mothers and six wardmaids would effect a further saving of £950 a year. The Local Government Board adhering to their opinion, it was decided that the architects should have taken out a complete set of quantities for pairs of one and two-story cottages respectively, with drainage and other accessories. The architects now presented a very full report on the matter, having prepared plans and taken out quantities for no less than five different schemes. The resultant cost of the whole institution, including drains and roads, was as follows:—Single-story double cottages for twenty-four patients, 156,898*l.*; ditto for thirty patients, 133,423*l.*; two-story blocks of four single cottages, forty-eight patients in each block, 166,724*l.*; ditto, amended and compressed, 151,533*l.*; ditto, with common entrance and staircase for two cottages, 144,663*l.* It will be seen that the Committee's own amended scheme with the enlarged unit of fifteen, to which, as already stated, it was decided to adhere, worked out the cheapest.

Leavesden Asylum. — Plans by Messrs. Newman & Newman, architects, of proposed alterations to the laundry at this asylum, designed for the better separation of the working patients employed, and estimated to cost 520*l.*, having been approved by the Asylums Committee and the Works Committee, were adopted and ordered to be forwarded to the Local Government Board for their formal sanction.

Darenth Asylum.—It was resolved to apply to the Local Government Board for permission to accept without advertising, the tender of Messrs. H. Smith & Son, of Lambeth, for the erection of two brick ovens at this institution, for 245*l.*

ENGINEERING SOCIETIES.

SOCIETY OF ENGINEERS.—At a meeting of the Society of Engineers, held at the Royal United Service Institution, Whitehall, on Monday, Mr. J. C. Fell (President) in the chair, a paper was read by Mr. Sherard Cowper-Coles on "The Electrolytic Treatment of Complex Sulphide Ores." In introducing his subject, the author gave particulars of the present concentration system adopted at Broken Hill, so as to produce an argentiferous lead concentrate sufficiently low in zinc to be available for the ordinary lead smelting furnace. He then proceeded to give some particulars and figures of the cost of distilling zinc from its ores, and recounted some of the chief characteristics of sulphide ores, and gave analyses of various samples. A historical sketch of the investigations undertaken by various workers in this field then followed, and particulars were given of Watt's, Diffenbach's, Ashcroft's, Siemens & Halske's, Hoepfner's, Mohr's, and Swinburne's processes. The author then described in detail a number of experiments he had made on a practical scale on sulphide ores, and enumerated the difficulties that had been encountered, and how they had been met. Information was given as to the crushing of the ore, the roasting, and details of the type of roasting furnace employed. The next operation described was the leaching out of the zinc with sulphuric acid, and purifying the zinc solution obtained by passing it through epuration tanks, the purified solution then being circulated through electrolysing cells, and the zinc deposited in a metallic form. The advantages of aluminium revolving cathodes were then considered, also the best material for the anodes. The effect of impurities in the electrolyte was described, and an analysis given of a sample of zinc sponge, also particulars as to the cost of depositing zinc. A diagram was exhibited showing the actual weight of zinc deposited as compared with the theoretical, with varying current densities. The process of manufacturing zinc white and zinc sulphate from zinc-bearing ores and the leaching out of the lead remaining in the ore after the zinc has been extracted, were described in detail. The cost of electro-depositing the lead was also given, the cost being far less than that of zinc. The author stated that the current which would deposit one ton of zinc would deposit three tons of lead. The theoretical amount of electrical energy required to deposit one ton of lead was stated to be 263·5 kilowatts, which, at ¼d. per kilowatt, equals 11s. per ton of 2,240 lb. of lead deposited. Particulars of a process for the manufacture of litharge and white lead direct from lead-bearing ores were also given. The author then described the final operation of leaching out the silver and depositing the same from a cyanide of potassium solution.

APPLICATIONS UNDER THE LONDON BUILDING ACT, 1894.

At the meeting of the London County Council on Tuesday, the following applications under the London Building Act were considered. Those applications to which consent has been given are granted on certain conditions. Names of applicants are given in brackets. Buildings are new erections unless otherwise stated.

Lines of Frontage.

Fulham.†—The retention of a wood and iron stable in the yard at the rear of No. 32, Stephendale-road, Fulham, abutting on Hamble-street (Mr. A. Smith).—Consent.

Kensington, North.†—That permission be given to Messrs. Huxley & Collins to retain a projection (an illuminated sign) at the "Station Hotel," Bramley-road, Notting Hill, extending beyond the general line of buildings in that street (Mr. J. Huxley).—Agreed.

St. George, Hanover-square.—Rebuilding of premises on the north side of Dering-yard, at the rear of No. 68, New Bond-street (Messrs. Romaine-Walker & Besant for Mr. J. J. Duveen).—Consent.

Wandsworth.†—That permission be given to Messrs. J. Robertson & Son, Limited, to retain a projection (an illuminated sign) at the "Queen's Head" public-house, Putney Bridge-road, Wandsworth, extending beyond the general line of buildings in that street.—Agreed.

Lewisham.†—A dwelling-house on the west side of Montague-avenue, Brockley, to abut upon Chalsey-road (Mr. S. Frampton).—Refused.

Hackney, Central.—A conservatory on land adjoining No. 35, Upper Clapton-road, Hackney (Mr. O. C. Greenwood).—Refused.

Chelsea.† — A one-story addition to No. 70, Lowndes-square, Chelsea, to abut upon William-street (Messrs. Sprake, Foreman, & Son for Miss A. M. R. Gurwood).—Refused.

Hammersmith.† — A one-story building on the north side of Waldo-road, Hammersmith, at the corner of Holberton-gardens (Mr. W. J. Ancell for the Fireproof Partition Syndicate, Limited).—Refused.

Strand.†—A projecting shop to Nos. 5, 7, and 9, Regent-street, St. James's (Messrs. Howell & James, Limited).—Refused.

Wandsworth.—A one-story shop on the west side of Florian-road, Putney, at the corner of Putney Bridge-road (Messrs. H. W. Crosse & Co. for Mr. H. W. Crosse).—Refused.

Width of Way.

Limehouse.—An addition and detached water-closets at the rear of the Friends' Mission Institute, Commercial-road East, Limehouse, at less than the prescribed distance from the centres of Hilton-street and Dorset-street (Messrs. E. Saunders & Son).—Consent.

Southwark, West.†—A warehouse on the east side of Gravel-lane, Southwark, at the corner of Lavington-street, at less than the prescribed distance from the centre of Gravel-lane (Messrs. F. Chambers & Son for Mr. F. J. Chambers).—Refused.

Space at Rear.

St. George, Hanover-square. — Two additional stories to the rear portion of No. 7, Hobart-place, Eaton-square (Messrs. G. Trollope & Sons).—Refused.

Alteration of Buildings.

St. George, Hanover-square.—An additional story to No. 43, Hill-street, Berkeley-square (Messrs. Burrell & Hind-Smith for the United Kingdom and General Provident Institution).—Refused.

Deviation from Certified Plan.

Strand.—Deviations from the plan certified by the District Surveyor under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding of No. 6, Walker's-court, St. James's, Westminster, at the corner of Peter-street (Messrs. R. H. and H. Kerr, for Mr. F. Newman).—Consent.

Westminster.—Deviations from the plans certified by the District Surveyor under Section 43 of the London Building Act, so far as relates to the proposed rebuilding of the "Feathers" public-house, No. 34, Great Chapel-street, Westminster, on the site of Nos. 32 and 33, Great Chapel-street (Messrs. Shoebridge & Rising for the New Westminster Brewery Company, Limited).—Consent.

St. George, Hanover-square.—Certain deviations from the plan certified by the District Surveyor under Section 43 of the London Building Act, 1894, so far as relates to the proposed erection of a block of stabling on the site of No. 17, and part of No. 19, South-street, St. George, Hanover-square, at the corner of Balfour-mews (Mr. E. Balfour for the Duke of Westminster).—Refused.

St. Pancras, South.—Certain deviations from the plans certified by the District Surveyor under Section 43 of the London Building Act, 1894, so far as relates to the proposed rebuilding, with residential flats on the upper floors, of the "Apollo" public-house, No. 191, Tottenham-court-road, at the corner of Francis-street, on the sites of Nos. 191 and 192, Tottenham-court-road and No. 19, Francis-street (Mr. C. Fitzroy Doll for Messrs. Ireland and Fitch).—Refused.

Line of Frontage and Width of Way

Hammersmith.†—Two dwelling-houses on the west side of Goodwin-road, and a one-story building at the south end of Leffern-road, Greenside-road, Hammersmith (Mr. F. S. Hammond for Mr. C. S. Thurlow).—Refused.

Line of Frontage and Construction of Lookum.

Hammersmith.—The erection and construction of a lookum in front of the Phœnix Brewery, Latimer-road, Notting Hill (Messrs. Richardson & White for Messrs. Campbell, Johnstone, & Co., Limited).—Consent.

Formation of Streets.

Woolwich.—That an order be issued to Mr F. Bethell and Messrs. Church, Quick, & Whincop, sanctioning the formation or laying out of new streets for carriage traffic on the Suffolk-place Farm and Bostal Farm, Abbey Wood, Plumstead; an alteration in the position of Casilda-street, a diversion and widening of Basildon-road, and also the widening of portions of Bostal Hill-road, Bostal-lane, and Knee-hill (for the Royal Arsenal Co-operative Society, and Queen's College, Oxford). That the names, McLeod-road, Federation-road, Owenite-street, Chancelott-road, Shieldhall-street, Greening-street, Congress-road, Crumpsal-street, and Conference-road, be approved for the new streets.—Agreed.

Lewisham.†—That an order be issued to Mr. J. W Webb, refusing to sanction the formation or laying out of a new street for carriage traffic, to lead from Montem-road to Blythe Hill, Lewisham.—Agreed

Cubical Extent.

Finsbury, East.—The erection at Nos. 1 to 8, Paradise-street, Tabernacle-street, Finsbury, of an addition to those premises which would then exceed in extent 250,000 but not 450,000 cubic feet, such premises to be used only for the purposes of the trade of bell-punch manufacturers and printers (Mr. Maurice B. Adams for the Bell Punch and Printing Company, Limited).—Refused.

Means of Escape from Top of High Buildings

City of London.—Means of escape in case of fire, proposed to be provided on the fifth story of No. 147, Queen Victoria-street, City, for the persons dwelling or employed therein (Mr. G. Cuthbert for Messrs. Babcock & Wilcox, Limited.)—Consent.

Holborn.—Means of escape in case of fire proposed to be provided on the top story of Cranston's Waverley Temperance Hotel, No. 130, Southampton-row, Bloomsbury, for the persons dwelling or employed therein (St. Pancras Ironwork Company, Limited, for Mr. R. Cranston).—Consent.

Height of Buildings.

Whitechapel.—That the application of Mr. F. Matcham for Mr. W. M. Tilson for an extension of the period within which the erection of a theatre building on the south side of Whitechapel-road, Whitechapel, with the east wall exceeding in height the width of Tasmania-place, was required to be commenced, be granted, upon condition that the building referred to be commenced within one year from May 9, 1899.—Agreed.

The recommendations marked † are contrary to the views of the Local Authorities.

The Student's Column.

ROADS: THEIR CONSTRUCTION AND MAINTENANCE.

PART III.—CONSTRUCTION (*continued*).

20.—THE ROAD-COATING (*continued*).

THE use of stone block pavements is in many cases undesirable, on account of the noise of traffic, which, although somewhat diminished by modern improved methods of construction, can never be completely remedied while the feet of horses and the rims of wheels are clad in iron. The evil also tends to increase as the surface becomes unequally worn, and, at the same time, travelling upon such roads becomes more and more jolting and unpleasant. For this and other reasons a smoother road surface is often desirable, and even necessary, in residential districts.

Brick Pavement.—Wood or asphalt have hitherto proved to be the most efficient substitutes for stone in such cases; but there is another pavement which, although not much

used in this country, forms a kind of connecting link between them—viz., bricks. Whenever brick pavement has been tried in England under heavy traffic it has been found to be far from satisfactory on account of the unevenness of wear, while, if highly vitrified, the bricks are even more slippery than stone. In America bricks have been largely used, and in many parts of Holland they form the most conspicuous paving material. It is possible, therefore, that the difficulty in selecting a suitable variety of brick, sufficiently uniform in quality to maintain an even surface under wear, may militate against the more extensive use of this material, which, for light traffic, ought to possess many advantages. It is claimed that, when properly constructed, brick pavements are noiseless and offer a minimum resistance to traction, having a smooth surface, which does not become slippery, even when wet. Being impervious it is easily cleansed, and is, therefore, sanitary; it can be laid on gradients which are quite unsuitable for asphalt; and, also, it can be easily taken up for repair. In spite of these obvious advantages, brick pavements are, in this country, almost exclusively confined to footways.

In laying brick pavement the same kind of foundation as already described may be used; but in America it is frequently considered enough to place upon the road-bed an under-layer of bricks as a foundation for the upper layer of paving brick. A layer of sand or gravel, 3 in. or 4 in. thick, should be first spread over the road-bed and well rolled; upon which bricks are placed flat, with their length parallel to the road axis, and arranged so as to break joint. A sand cushion, about an inch thick, is spread over the surface of the foundation. This should be lightly rolled, and quite dry before bedding the bricks, which must be laid perfectly true, in close contact and evenly supported at the base. The bricks are placed on edge in courses, at right angles to the road line, breaking joint in the usual manner. Some American engineers prefer that the courses should be laid diagonally, at angles of 45 degs. or 60 degs. with the kerb. It is maintained that the wear in this position is more uniform. The laying should start from the kerbs towards the centre, alternate courses beginning with half-bricks, in order to break joint. The courses should also be completed right across the street as far as possible, owing to the danger of disturbance to which partial courses would be subjected. When laid the bricks should be rammed with a wooden rammer, or rolled, and any uneven sinking should be made good by rebedding the bricks where necessary. The rammer is sometimes used on the bricks direct, but otherwise a plank is placed between. The whole surface must be finally brought to a uniform level, and as soon as this is secured the joints may be filled in with grouting, which may be either hydraulic lime cement, or the bituminous cement already described for stone pavements. This is applied by means of a special funnel-shaped filler, which prevents the grouting from running over the surface of the pavement. A thin layer of sand, $\frac{1}{2}$-in. thick, is then spread over the surface, and the pavement is completed. In America the bricks are sometimes boiled in coal tar, the grouting also consisting of that substance, and the surface afterwards finished with a layer of screened gravel. The grouting has an important influence in diminishing the noise of traffic. When sand alone is used for this purpose, as is sometimes done, not only is the noise more pronounced, but also the joints are no longer watertight.

Wood Pavement.—This substance is absolutely the least noisy of all paving materials, and, while it is not far behind asphalt in ease of traction, it is far superior to it in foothold. This class of pavement is, in fact, eminently suitable for all but the heaviest traffic of large manufacturing towns. As has already been pointed out, the most serious objection to the use of wood pavement is its absorptive tendency, which renders it difficult to cleanse, and therefore insanitary. These evils, however, can be minimised by proper construction and the selection of suitable kinds of wood. The difference in absorption in hard and soft woods is marked. It is stated by Mr. W. N. Blair that, whereas soft yellow deal absorbs 23·44 per cent. of moisture, Jarrah only absorbs 10·71 per cent., and Karri only 7·77 per cent. If the blocks are creosoted, and properly laid with close-fitting joints, grouted with pitch, this percentage is materially diminished. In the construction of wood pavement special attention should be given to the foundation. Experience shows that the wear is largely increased where the surface from any cause becomes uneven. This may arise from want of stability in the foundation, elasticity in which has been known to cause the wood blocks to split asunder. The plank foundation, once extensively used in the United States, and in the early pavements laid in this country by the Improved Wood Company, suffers from this defect. Good results are said

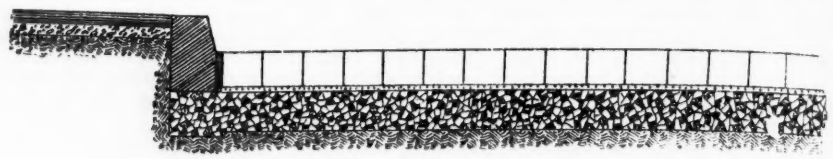


Fig. 1.—Wood Pavement with Expansion Joint.

to have been obtained in Norwich without any foundation at all except the ordinary road surface, levelled up with shingle or sand; but in general a solid concrete foundation, 6 in. thick, is preferred.

The concrete bed is finished off to the required contour of the road surface, the degree of convexity being in accordance with the width of the roadway. Various forms of contour have been given by road engineers, but the following table, taken from the measurements adopted in France, will sufficiently show the degree of curvature recommended :—

Width between kerbs.	Height of crown above gutter.	Convexity in proportion to the whole width.
ft.	ft.	
21·64	·383	1 in 57
23·61	·410	1 in 57
29·52	·498	1 in 59
39·36	·642	1 in 61
45·92	·741	1 in 62
65·60	1·036	1 in 63
88·56	1,377	1 in 64

The concrete should be mixed in the following proportions :—*Pebbles*, clean and between 2½ in. and $\frac{3}{4}$ in. in diameter, one cubic yard; *sand*, also clean and between $\frac{1}{16}$ in. and $\frac{1}{8}$ in. in size of grains, half a cubic yard; best *Portland cement*, 420 lbs. Instead of the pebbles, broken stone or ballast may be used when convenient. The materials are first mixed dry, as near as possible to the place where it is to be used. Water is then added gradually, and the cement worked to the necessary consistency, when it is spread and brought up to the required surface grade. Sometimes a top layer, 1 in. thick, is added after two or three days, consisting of cement and sand in the proportion of 760 lbs. of the former to one cubic yard of the latter. The Asphaltic Wood Paving Company place upon the concrete a bed of mastic asphalt, ½ in. thick, to form a bed for the wood blocks. At other times a sand cushion is laid upon the concrete bed; but some engineers lay the blocks directly upon the concrete itself. It is said that the sand cushion is a distinct advantage when pitch grouting is used, as the sand becomes impregnated with pitch, and holds the blocks firmly in position, preventing their upheaval, which sometimes occurs when they are laid directly upon the concrete bed. There are many other ways of bedding the blocks, which may be regarded as peculiarities of special types of pavement. Thus, in Harrison's wood pavement there is an under layer of asphalte, which is divided into sections by strips of wood 2 in. wide and ½ in. thick, placed upon the concrete. Upon these strips the wood blocks are laid, and liquid asphalte is poured into the joints, penetrating into the spaces beneath. In Henson's wood pavement, the concrete is covered with roofing felt saturated with hot asphaltic composition.

Coming next to the question of the manner of laying the blocks, there is a great difference in practice with regard to the joints. It was formerly the custom to leave open joints, varying from $\frac{1}{8}$ in. to $\frac{1}{4}$ in. in width between the blocks. These were afterwards filled up, either with cement grouting or with small gravel or shingle, finally impregnated with a boiling mixture of pitch or creosote oil. The object of this arrangement was to provide space for the expansion of the blocks when wet. In modern practice, the blocks are usually laid as close together as possible. Open joints have many objections. Not only do they enable a lateral spreading of the fibre of the wood to take place under the pressure of traffic, but also they hasten the wear of the blocks by exposing their edges to abrasion. Cleansing is also rendered more difficult by the adherence of mud in the joints. It is found, also, that close jointed pavements do not give so much trouble in expansion as those with wide joints. Moreover, expansion is provided for more effectually in another way, viz., by an expansion joint close to the kerb, on each side of the street. This is simply a longitudinal joint, 1½ in. wide, and filled up with sand or pitch (see fig. 1). The same result may be attained by laying the blocks as shown in the diagram, fig 2, forming what is

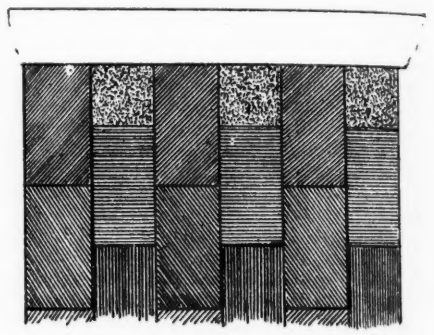


Fig. 2.—Dog-tooth Expansion Joint.

known as "dog tooth" expansion joints, which give each course an expansion range of half the length of a block.

In some methods of paving open joints are still in use, and more especially is this the case with the joints between the courses. The Asphaltic Wood Pavement Company keep the courses $\frac{9}{16}$ in. apart by means of laths of that thickness which are placed against each course as laid. Into these joints melted asphalte is poured to a depth of about 2 in. This unites with the asphaltic underlayer and increases the rigidity of the pavement. The upper part of the joint is filled up with hydraulic lime cement. In other cases strips of tarred felt have been used to preserve an $\frac{1}{8}$-in. joint between the courses.

Whether close or open, the joints must next be filled with grouting, of which two kinds are in use, viz., hydraulic *cement grout* and *pitch grout*. The former requires an open joint of at least $\frac{1}{4}$ in., which is, as already pointed out, a disadvantage to the wear of the blocks. Another objection to cement grout is that when set it is incapable of absorbing the expansion of the blocks. Pitch grouting is preferable for many reasons. Being somewhat elastic, it absorbs both expansion and contraction; it can also be used with perfectly close joints, and while being quite as impervious as cement, it is more easily manipulated, and exerts a more beneficial action upon the preservation of the wood. The blocks also never work loose, an occurrence by no means uncommon with cement joints. Pitch grouting can be run into the joints only when the wood is perfectly dry; but traffic may be allowed at once, whereas cement joints require a week to set.

The proportions of pitch and creosote oil for pitch grouting must be such that the mixture is freely ductile at the ordinary temperature of the air, about 1 cwt. of pitch to 1½ or 2 gallons of oil being usually required for an average sample of pitch. It is taken out in buckets from a travelling pitch boiler, and poured while still hot over the pavement, a rubber squeegee being used to push it forward over the joints. Into these it sinks, leaving very little upon the surface, which is finally spread with a thin layer of fine sharp gravel or stone chippings.

Asphalte Pavement.—As a paving material compressed asphalte is very nearly perfect. In one respect only, viz., slipperiness, is it deficient. Being without joints and absolutely impervious, it is one of the most sanitary and

easily cleansed of all road pavements. It also dries quickly and resists compression to such a degree that the heaviest traffic makes no visible impression upon it. In the early days of asphalte pavements they were found to be liable to soften in hot weather, and to disintegrate under the influence of severe cold. The first defect has been overcome by maintaining a suitable proportion of bitumen in the asphalte rock, while the latter is obviated by a proper foundation. A substantial concrete foundation is absolutely necessary, the asphalte covering forming simply a thin layer, about 2 in. thick, which is utterly unable, of its own accord, to withstand the weight of traffic. The concrete foundation must, therefore, be made strong enough to carry the traffic of its own accord. For this purpose a thickness of 6 in. is generally considered sufficient, and for light traffic upon a good road bed, even less may be strong enough.

In America bituminous concrete has been sometimes used as a foundation for this class of pavement, under the impression that a more complete amalgamation then takes place between the superficial layer of asphalte and the supporting base, and that disintegration is, therefore, less likely to take place than with hydraulic cement concrete, with which the asphalte coating does not form a perfect bond. There is, however, grave danger in using so yielding a foundation as bituminous concrete, which may cause, under the pressure of heavy traffic, both wave surfaces and cracks to appear in the asphalte. This tendency is to some extent diminished by the use of an intermediate layer or binder course, 1½ in. thick, formed of asphaltic paving cement and broken stone. This course is mixed in the proportion of one gallon of cement to one cubic foot of stone. It is laid while hot, and rolled in the same way as the surface layer. This method, known as the *combination pavement* is extensively used in America, where the conditions of construction differ somewhat from that of our own country, owing to the more extensive use of the lake asphalte of Trinidad and Bermunda, instead of the rock asphalte commonly employed in European countries. In this country and also in Europe generally, it is thought desirable to lay the asphalte upon a more rigid support. The formation of a bond between the asphalte and its foundation is not necessary, and moreover becomes a positive disadvantage when repairs are required, since it prevents the surface layer from being stripped off without injuring the support. Whereas the hydraulic base remains permanently intact, and only needs to be re-surfaced to be as good as ever.

On the whole, therefore, the best practice in this country is decidedly in favour of a foundation of hydraulic cement concrete, upon which the asphalte layer must next be spread.

The natural asphalte rock should contain not less than 5 per cent. nor more than 13 per cent. of bitumen, and as the percentage varies considerably, such a mixture should be taken that no part contains less than the minimum amount mentioned above. It is usual also in specifications to exclude all old asphalte pavement from being utilised for new work. The asphalte rock is then crushed into small pieces and pulverised to a fine powder, capable of passing through a sieve of $\frac{1}{10}$-in. mesh. This powder is then heated to a temperature of from 250 deg. Fahr. to 270 deg. Fahr., in revolving cylinders, each particle being thus kept in motion to ensure its being thoroughly heated without either calcining or adhering together. The heated powder is now quickly transported to the locality where it is to be used in specially constructed carts, so that only a small amount of heat is lost in transit. It is then spread on the concrete foundation evenly to a depth of 3 in., and raked to a level surface. The concrete must be quite dry before the asphalte is placed upon it. If it is at all damp the heat of the asphalte will vaporise the water, which, in its endeavour to escape, will cause cracks, and will bring about the subsequent speedy disintegration of the pavement. Many failures in asphalte pavements, perfectly laid in other respects, have been due to its being laid on a damp foundation.

It is now well rammed with iron punners weighing about 10 lb., and heated to prevent adhesion of the powder, at first lightly, so that an even thickness is preserved, and then with heavy blows. The surface is then smoothed up with a curved iron implement, also made hot, after which it is again rammed and rolled with a heavy roller weighing about half a ton. By this means the asphalt layer is compressed to about two-thirds of its original thickness. A light sprinkling of sand is then given and the road is ready for traffic.

In America, where asphaltic cement is more commonly used, the compression is effected by heated rollers, and is carried rather further than is usually the case in European pavements. Compressed asphalt does not begin to wear until complete compression has been brought about by the traffic, which does not usually take place until the pavement has been at least two years in use. There is thus a distinct gain in the life of the pavement by not carrying compression to its utmost limit in the first instance.

In many places in America asphaltic blocks have been used instead of sheet asphalt. These are made of crushed limestone and asphaltic cement, and are laid close together in the same manner as wood pavement, but without any grouting. They soon become cemented together under the pressure of traffic into a solid impervious mass. These blocks, being highly compressed in the process of manufacture, and having a depth of about 5 in., can be laid on a more slender foundation than is required for sheet asphalt; but they should be used only where the traffic is moderate.

Many efforts have been made to produce cheaper substitutes for asphalt, involving the use of coal-tar; but up to the present time their success has not been sufficiently conspicuous to warrant any notice of them here.

In concluding the description of the various kinds of road coverings mention may be made of two which are interesting both on account of their novelty and efficiency.

India-rubber Pavement.—This consists of sheets of india-rubber, of large size, and an inch or more in thickness, which are laid upon a concrete foundation, and held in position by strips of iron, clasping the edges of each sheet. A sample of this pavement is laid at the entrance to the Euston Railway terminus. For foothold, homogeneity, non-porosity, noiselessness, and wear no better substance could be found, but its expense is prohibitive.

Cork Pavement.—Blocks made of ground cork, compressed with a bituminous mixture into a solid mass, have recently been introduced with every promise of success. The material gives absolutely secure foothold in all conditions of the weather, and is non-absorbent, noiseless, and durable, being at the same time very light and elastic. It is laid like wood pavement on a concrete foundation, and has been tried at the entrance to Liverpool-street Station on a gradient which would prohibit the use of asphalt. If the wearing power of these blocks proves satisfactory, they should take a prominent place amongst modern paving materials.

Correspondence.

LUTON AS AN INDUSTRIAL CENTRE.

SIR,—A Joint Committee of the Luton Town Council and Chamber of Commerce has recently been formed for the purpose of bringing before the public the advantages of the town of Luton as a manufacturing and industrial centre.

It is believed that a number of manufacturing firms in and around London are seeking new neighbourhoods in consequence of the increase of rentals and labour in the metropolis. To any such the town of Luton offers peculiar facilities:—

1. It is situated within thirty miles of London, with unusually good railway service, being on the Midland main line, and on a loop line which connects the town with the Great Northern and London and North Western Railways.

2. It is well lighted, has excellent roads, an abundant water supply, and is *exceptionally* healthy, its death rate being lower than that of any manufacturing town in the kingdom.

3. As the centre of the straw hat manufacturing industry it provides remunerative employment for female operatives.

4. Living expenses are reasonable; good houses can be had at about 5s. 6d. per week. The rates are lower than those of any town of its size in the kingdom, and accordingly the rates of wages are low.

5. Extensive sites for warehouses and factories with railway sidings, if required, can be obtained at very moderate prices.

6. Exceptional advantages are provided in the nature of elementary, higher grade, and technical education.

We shall be obliged if you will allow us, through the medium of your valuable journal, to bring these advantages before your readers in the hope that we may be of service to some of them who may be seeking accommodation for industrial works of any class.

Any additional particulars will be gladly supplied on application to the undersigned or to the Town Clerk, Town Hall, Luton.

GEORGE WARREN, Mayor of Luton.
FRED. W. BECK, President of Chamber of Commerce.
THOMAS KEENS, JN., Secretary to Joint Committee, and to Chamber of Commerce.

Chamber of Commerce Buildings, Luton.
Nov. 4, 1899.

"ELECTRIC WIRING, FITTINGS, SWITCHES, AND LAMPS."

SIR,—In the notice of the above-named new book of mine, which appeared in your issue of 28th ult., you drew attention to a rather serious slip on page 53. I have now revised the wording of the paragraph in question, rendering my meaning more clear and correcting the error, and the revised page will be inserted in the next batch that is printed off. I shall be obliged if you will make this known to your readers.

W. PERREN MAYCOCK, M.Inst.E E.

GENERAL BUILDING NEWS.

BAPTIST CHAPEL, HEBDEN BRIDGE, YORKSHIRE.—On the 31st ult. a new Baptist chapel at Hebden Bridge, to be known as the Birchcliffe Baptist Chapel, was opened. The style of the building, which has been erected from the plans of Messrs. Sutcliffe & Sutcliffe, is Italian Renaissance. The principal features of the front are a broad flight of steps leading into a large arcaded portico, with staircase pavilions on either hand, with five arches supported on granite columns. The interior of the chapel consists of a lofty central portion or nave, lighted by circular clearstory windows above the flat roofs of the side aisles. A gallery runs over the side aisles and over the entrance end of the chapel. Granite columns supporting arches divide the nave from the aisles. A recess is provided at the back of the chapel for the choir. There are three seats on each side, facing each other. In the central space between them the baptistry is placed. This has an ornamental tiled floor and tiled sides. In front of the baptistry is the rostrum, which is raised on a semi-circular communion space, approached by three steps from the body of the chapel. In the upper part of the choir walls a stained-glass window has been inserted, representing St. John baptising in the River Jordan. Most of the floors are covered with wood blocks, those in the aisles being of oak, whilst the communion space is formed with blocks of oak, teak, and jarrah, laid in an ornamental pattern.

MISSION CHURCH, BRISTOL.—The new St. Silas' mission church and hall in Union-road, St. Philip's, was opened on the 1st inst. It occupies the site of the old Mission Hall, and it will hold 500 persons. There is a revolving screen, which shuts off the chancel from the main building. The building has been constructed of Winterbourne stone, with Cattybrook brick facings, and covered with Broseley tiles. The roof is of open timber pitch pine. There are a vestry and class-room, and other accommodation. The architects are Messrs. Munro & Son, and the contractor was Mr. A. J. Beaven.

CHURCH, HORSHAM, SUSSEX.—The foundation stone was laid on the 31st ult of a new church in Rusham's-road, Horsham. Plans were prepared by Mr. G. Scott, and the tender of Messrs. Rowland Bros. was accepted. The church will be Early English in style, faced with red bricks inside and out. It will consist of a nave, chancel, organ chamber, with clergy and choir vestries. When necessary it is proposed to extend the nave two bays further westward, and then a permanent west porch will be erected. The windows of the church will be glazed with lead-light glazing.

CHURCH, DEGANWY, NEAR LLANDUDNO.—The Bishop of St. Asaph consecrated on the 1st inst., the new Church of All Saints, erected at Deganwy. The church occupies a position on the slope of a hill overlooking the estuary of the Conway. The building consists of nave, two aisles, chancel, and sacrarium, vestries at the north side, with organ over, and a baptistry at the west end under the tower, and provides accommodation for between 400 and 500 people. The walling is of local stone from a quarry at Bodysgallen, and the chiselled work is of Manley stone. All the roofs are of oak, and are covered with dark green slates, the choir stalls and pulpit being also of oak. The east window is filled with painted glass. The five compartments in it illustrate the Nativity, the Agony in the Garden, the Crucifixion, the Resurrection, and the Ascension. The remaining windows

in the chancel illustrate post Resurrection scenes' Other windows in the chancel contain figures of the Four Evangelists. These are in grisaille work. All the windows have been designed and executed by Messrs. Lavers & Westlake, of London. The organ was built by Messrs. Alex. Young & Sons, of Manchester. The case has been specially designed by the architect. The white marble font, with green shafts and pavement under, was executed by Messrs. Geo. Roberts & Bro., sculptors, Llandudno. Messrs. Douglas & Minshull, of Chester, are the architects of the church, and the contractors are Messrs. Samuel Parry & Sons, of Llanrwst and Llandudno Junction.

WESLEYAN CHAPEL, SHEFFIELD.—The formal opening of Trinity Wesleyan Methodist Church, Firth Park-road, Sheffield, took place on the 2nd inst. The church occupies a site at the junction of Firth Park-road and Owler-lane. There are four blocks of buildings. The plan is cruciform, with nave, aisles, transepts, and chancel. The church is 88 ft. long by 45 ft., and 63 ft. 8 in. wide across the transepts. The chancel is 20 ft. long, making the total length, including nave and chancel, 108 ft. Seating accommodation has been provided for 960 persons. The pulpit is of polished alabaster, supported on an octagonal base of red Mansfield stone, with polished marble columns at the angles. The font is of alabaster and black marble. Mr. J. Wills, of Derby, was the architect, and Mr. Geo. Carr, of Sheffield, the builder. The cost is 9,000*l.*

CHURCH, LEICESTER.—The foundation stone of the new St. James's Church, Leicester, was laid recently. The architects are Messrs. Goddard & Co., of Leicester.

ST. BARTHOLOMEW'S CHURCH, BIRMINGHAM.—Various improvements have been carried out at this church, under the superintendence of Messrs. Franklin, Cross, & Brookes, architects, of Birmingham. Three stained glass windows have been erected in the east end, in place of the old lead lights. The windows, which have been removed from St. Peter's, Dale End, were designed by Mr. F. Pemberton, and have now been adapted by Messrs. J. R. Lee & Co. The other improvements include a new oak reading desk and seat and a new font.

ST. STEPHEN'S CHURCH, LEWISHAM.—A sacristy has been added to St. Stephen's Church, and oak fittings designed by the architect fixed therein. The builder was Mr. G. F. Wright, of Westminster. A new credence table, of marble, has also been added to the church, and the old one placed in the Lady Chapel. This was made by Messrs. Daymond & Sons. Wrought-iron gates have been placed in the western entrance to the chapel, made by Mr. Mylam, of St. John's Wood. The whole of the work has been carried out from the designs and under the superintendence of Mr. Philip A. Robson, architect, of Westminster.

NEW WESLEYAN CHURCH, KENSAL RISE.—The foundation stones for this church were laid on the 2nd inst. The building is designed in the Decorated style of Gothic architecture, with nave, transepts, and organ recess, and seating accommodation provided for about 750, inclusive of galleries on three sides of the church. A tower and spire are to be placed at the north-west corner, rising to a height of 100 ft. Three vestries are provided. The interior joiner's work is to be of pitch pine, varnished. The roof, which will be an open one, headed with coved sides, is also to be of pitch pine, varnished, in one span without pillars. The tracery windows of the church are to be filled in with ornamental leaded lights. The architect is Mr. W. J. Morley, of Bradford, and the contractor for the whole of the works is Mr. Wm. Gibson, of Exeter. The site is large enough to allow of schools being built in the future.

CENTRAL SCHOOLS, MORECAMBE.—Mr. John B. Newton, of Bare, whose designs for new Central Schools, Morecambe, were selected recently in competition, has been formally appointed to superintend the erection of the buildings. The estimated cost of the entire structure is 16,000*l.*

TECHNICAL SCHOOL, LONGTON, STAFFORDSHIRE.—The Sutherland Institute Technical School was opened on the 27th ult. by the Duke of Sutherland. The building is designed to combine within its walls a free library, a museum, and a school of science, art, and technology. The architects were Messrs. Wood & Hutchings, of Tunstall and Burslem, and the contractors were Messrs. Tompkinson & Bettelley, of Longton. The following were the subcontractors:—Messrs. Homan & Rodgers, Manchester, for fireproof construction; Mr. W. Durose, Tunstall, for art metalwork; and Mr. Boulton, Longport, red facing bricks and roofing tiles. The clerk of works was Mr. W. Collis. The total cost of the buildings will be about 9,000*l.* The institute stands on a site given by the Duke of Sutherland in Stone-road. The main body of the building is three stories high, and is in the Renaissance style, the whole structure having red brick facings, with terra-cotta dressings. The block is set back from the road a distance of 21 ft. The main entrance, from Stone-road, opens into a large hall. The ground floor will be used as a library and reading-room. The latter, an L-shaped room, 60 ft. by 30 ft., and 28 ft. by 16 ft., lies on the left of the entrance-hall. On the right is the lending department of the library, librarian's room, and reference department. The site upon which the building has been erected slopes from the front, so that at the back there are several rooms on a lower level than the library. These will be used for manual training and engineering classes, and in the same part of the building there is a kitchen for cookery classes. The first floor contains a science master's rooms, science class-room seated for thirty-two students, a balance-room, a chemical laboratory fitted for thirty-two students, a science lecture-room seated for fifty-six students, a modelling-room, and a room for plaster casting. On the second floor there are rooms for advanced art classes, for mechanical drawing and designing, for light-and-shade drawing, and for elementary art. Another room on this floor has been set apart for use as a museum.

TECHNICAL SCHOOLS, REDDITCH.—The foundation-stone of the Redditch new technical schools was laid on the 1st inst. The building will be built of red brick. It will contain cloak-rooms, class-rooms, carpenters' and smiths' shops, store-rooms, master's-room, and lecture theatre, and in the top room of the building, which will be 60 ft. high, it is intended to place objects of local and educational value to form the nucleus of a museum. Mr. H. R. Lloyd is the architect, and Mr. G. Huxley is builder.

UNIVERSITY MEDICAL BUILDINGS, ST. ANDREW'S.—These buildings accommodate four scientific departments, viz., anatomy, physiology, botany, and materia medica. There is a laboratory 38 ft. by 27 ft. in each department for materia medica, physiology, and botany. Each will also have a lecture-room, 18 ft. by 14 ft., and a museum, 24 ft. by 14 ft. The physiology department will, in addition, have a number of smaller rooms for private research. A practical room, 45 ft. by 22 ft., is also in the anatomy department; a lecture-room, 20 ft. 4 in. by 14 ft.; and a museum, 38 ft. by 26 ft. It contains, further, a theatre, 27 ft. by 24 ft. The total cost of these buildings is estimated at about 14,000*l.* Messrs. Gillespie & Scott, were the architects.

SUNDAY SCHOOL, LEWES, SUSSEX.—New premises for the Sunday school in connexion with the Eastgate Baptist Chapel were opened recently. The buildings, which have been erected opposite the chapel itself, in the angle between Eastgate-street and Waterloo-place, are of red brick. Mr. H. Curtis Card was the architect.

CHILDREN'S SHELTER, DUNDEE.—The new children's shelter, in Constitution-road, was opened on the 31st ult. The building, which was in the market a year ago, has been altered and added to. Mr. William Alexander was the architect, and the contractors were:—Masonry, Messrs. J. & C. Hay; joinery, Messrs. John Scott & Son; slating, Messrs. J. Laburn & Son; plumbing, Messrs. Farquharson & Sons; plastering, Messrs. John Adam & Sons; and painting, Mr. J. Thomson.

MODEL LODGING HOUSE, MOTHERWELL, LANARK.—On the 2nd inst. the new model lodging house, known as the Victoria Home, was opened at Motherwell. The home, which is situated at the corner of Orbiston-street and Meadow-road, has been erected by the Lanarkshire Model Lodging House Company, Limited. The building is three stories in height to the front. The architect was Mr. A. Cullen.

Y.M.C.A. PREMISES, BURTON-UPON-TRENT.—New premises for the Young Men's Christian Association are to be erected in the High-street, Burton-upon-Trent. Mr. T. Jenkins is the architect.

NEW BANK, CHESTERFIELD.—New premises have been erected in Central Pavement, Chesterfield, for the use of the Yorkshire Penny Bank. The building was designed by Mr. J. R. Whittaker, and the contract was executed by Mr. Peck, of Chesterfield.

ASYLUM, KINGSEAT, NEWMACHAR, ABERDEENSHIRE.—The Sites and Buildings Committee of the Aberdeen District Lunacy Board have appointed Mr. A. Marshall Mackenzie, A.R.S.A., as the architect of the new asylum to be erected at Kingseat, Newmachar.

FOREIGN.

FRANCE.—The Municipal Council of Paris is occupied with the consideration of some new regulations in regard to the height of buildings and projections over the streets, with the special object of relaxing the rigidity of the present regulations, and allowing more liberty to architects in carrying out their designs.——The French Academy intends to offer, in 1900, a prize, called the "Prix Berger," of the value of 12,000 francs, for a work of art relative to the history of Paris, apparently to serve as a decoration of some public building or public place. Competitors must be of French nationality.——The new bridge over the Marne, between Nogent and Champigny, was opened last Sunday. It is carried out by M. Hétier, engineer, and M. Formigé, architect, in collaboration, and is composed of three arches. The cost has been 900,000 francs.——The fourteenth annual exhibition of ceramics by M. Lachenal has just been opened in the Georges Petit Gallery.——The Government has made a grant of 150,000 francs to the city of Toulouse for additional decoration to its Capitol. M. Pujol, architect, has been commissioned to prepare a scheme which will include the decoration and furnishing of the four Salons adjoining the "Salle des Illustres," and the decoration of the grand staircase. M. Pujol has also prepared a scheme for the decoration of the "Place du Capitole," comprising a monumental fountain in the centre and decorative masts in imitation of those at Venice.——The death is announced, at the age of eighty-five, of Mme. Horace Vernet, widow of the celebrated painter.

GERMANY.—The damage done to the monuments in the Victory-avenue, referred to last week, has been the occasion of directing attention to the safety of monuments generally in Berlin, and a number of the more valuable memorials of this description will henceforth have police protection. As regards the monuments in the Victory-avenue themselves, which, it will be remembered, were presented by the Emperor, new ones will probably have to be made, the various sculptors very generously having offered to do the work at a nominal fee. ——The reconstruction of the Academy buildings at Berlin is now again being considered by the Authorities. One of the buildings in this block, which has been long used as the Royal stables, will be shortly vacated, and another part of the block which was used for housing the "body-guard" is already practically free.——The Royal Academy for Music is to have a new home in Charlottenburg, which is to be ready in 1901.——A trial is going to be made at Berlin in lighting some of the thoroughfares from large lamp-posts placed in the centre of the roadway, as is already the case in Regent-street and other of our London thoroughfares; but at Berlin the lighting is only going to be auxiliary lighting, and not a substitution for side-lighting. Referring to the other lighting questions at Berlin, we hear that some of the large avenues of the Thiergarten will henceforth be lit by electricity—a matter which might receive the attention of the London County Council Parks Committee. Arc lights will be used.——The rectory buildings in connexion with the Emperor William Memorial Church have just been opened in the presence of the Empress. The architects are Messrs. Remiaras & Co., and some 20,000*l.* has been spent on the block. A large amount of this money was voluntarily subscribed.——A medal will be struck by the Ministry of Education to commemorate the centenary of the Royal Technical College at Berlin. ——The Municipal authorities at Berlin have just been considering a very important improvement scheme in the heart of the city, by which the new main thoroughfare known as the "Emperor William" street will be continued right through the Scheunenviertel. ——Another new church is to be erected in Berlin, this time near the Seestrasse, at a cost of about 20,000*l.* ——The great Government hospital building, known as the "Charité," is being gradually reconstructed, the work being spread over a number of years; but we now hear that Professor Virchow's Pathological Museum has been completed, and that the large administrative block has been roofed in. The chemical laboratories and the Nerve Hospital in connexion with the institution are also both nearing their completion.——Many Englishmen who know the Harz Mountains and the picturesque old places in that district will regret to hear that Hildesheim is constantly being modernised, but some attempt is now being made by the local antiquarian committee to prevent excessive vandalism.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Messrs. Alfred Williams & Co., artesian-well engineers and windmill manufacturers, have removed from 39, Great Eastern-street, E.C., to "Artesian Works," 814, Old Ford-road, Bow, E.

WESTMINSTER COLLEGE, CAMBRIDGE.—Messrs. Arrowsmith & Co. ask us to mention that the oak tables and furniture in the Senate Room were carried out by them from the architect's designs.

ISOLATION HOSPITAL, CHESTER.—In reference to this building, recently described in our columns, we are asked to state that it is warmed throughout by Messrs. Shorland's Manchester grates with descending smoke flues.

THE WORTS BEQUEST, CAMBRIDGE UNIVERSITY.—The University authorities have petitioned the High Court of Justice, Chancery Division, for a declaration that money applicable under the will (1709) of William Worts to repairs of the Gogmagog (or, rather, Hogmagog) Hills-road, is no longer so applicable, and ought to be applied for purposes of the University Library. After providing for certain annuities (long since determined) Worts appointed that the income of a sum of 3,000*l.* and of his real estate should be managed to the best advantage until a sum of 1,500*l.* was raised therefrom for the building of galleries in the University Church (Great St. Mary's), and then, similarly until a further sum of 1,500*l.* was raised for constructing a causeway from Emmanuel College to the Hogmagog Hills. He further set aside 40*l.* a year for the repairs of the galleries and road, appointed 200*l.* for two travelling scholarships tenable by members of the University, and gave the surplus of the income to the Library. In 1742 the Court of Chancery ordered that an additional yearly sum of 40*l.* should be applied to the repair of the road. Since 1882 the financial board of the University, a new body, have administered the trust income. In 1896 they made the last distribution of income between three parishes through which the rural part of the road passes and the Town

Council; in the meantime most of the road had become a main road, and, by effect of the Local Government Acts, repairable by the County Council. Mr. Justice North, in giving judgment, dismissed the petition, holding that the two trusts under the will and the order of Chancery were subsisting trusts, and did not come to an end by reason of the road being vested in, and iis repair devolving upon, the newly-constituted Local Authorities.

THE JUBILEE OF "NOTES AND QUERIES."—The proprietors of *Notes and Queries* celebrated last week the production of their hundredth volume, the first number having been published on November 3, 1849. Our contemporary was established as the outcome of some articles upon folk-lore that had appeared in the *Athenæum*, by the late W. J. Thoms, F.S.A., its first editor, who died in August, 1885. In February, 1878, Dr. Doran was succeeded as editor by H. F. Turle (*obiit* June, 1883), son of Dr. James Turle, organist of Westminster Abbey, 1831-75. The premises in Took's-court being acquired for the new sales branch of the Patent Office, the offices of *Notes and Queries* and the *Athenæum*, together with the "Athenæum Press," were removed in March, 1892, to new buildings on the east side of the site of St. Thomas's Church, in the Liberty of the Rolls, erected after Mr. W. C. Street's plans and designs, and illustrated in the *Builder*, April 9, 1892.

REMAINS OF ANCIENT THEATRE, BENEVENTO.—Professor Baccelli, the Minister of Public Instruction, under whose guidance the work is carried on, has just returned from Benevento and Pompeii, where, at the former place, a majestic Roman theatre has just come to light. A few stones have always been visible, but no one supposed them of any interest, until some preliminary investigations revealed an arch of the entrance to a theatre, composed of enormous blocks of travertine. From the parts brought to light it is deduced that this theatre will be one of the most important and perfect found up to the present. It is about the size of the Roman theatres of Pompey and Marcelles, and is better preserved. It has, in fact, already been ascertained that the entrance to the precincts, the immense ambulatories, the lower rows of seats, the stage, the orchestra (which measures about 300 ft.), and the pit, are all perfect.—*Pall Mall Gazette.*

ST. KATHERINE'S CHURCH, NORTHAMPTON.—In our notice last week of the reopening of St. Katherine's Church, Northampton, we stated that Messrs. Mainzer & Son executed the mosaic paving. It should have been Mainzer & Co., Limited, Berners-street, London, W.

STREET IMPROVEMENT, IPSWICH.—The Ipswich Corporation having applied to the Local Government Board for sanction to borrow 14,200*l.* for street improvement, a public inquiry was recently held in the Town Hall by Mr. G. W. Willcocks. The Town Clerk, Mr. Bantoft, stated that the application for the loan was in respect to an improvement of the Old Butter Market, Bridge-street, and College-street. Mr. Edward Buckham, Borough Surveyor, described the character and extent of the improvement.

GLADSTONE STATUE, BLACKBURN.—The Gladstone statue at Blackburn, erected at a cost of 1,800*l.* by public subscription, was unveiled on the 4th inst. by the Earl of Aberdeen. The statue, which stands 10 ft. high, is the work of Mr. John Adams-Acton.

SCOTTISH BUILDING TRADES' FEDERATION.—The fifth annual meeting of the Scottish Building Trades' Federation was held on the 2nd inst. at the "Windsor Hotel," Glasgow, Mr. James Leslie, builder, Aberdeen, President, in the chair. The Executive Council met at noon for the transaction of business. The representatives of the Federation, together with a number of specially invited guests, including a deputation from the National Association of Master Builders of Great Britain, took lunch at one o'clock in the large hall of the hotel on the invitation of the associations in Glasgow affiliated with the Federation. At two o'clock the Federation proceeded to business, the President in the chair. Representatives were present from Aberdeen, Airdrie and Coatbridge, Arbroath, Ayr, Bute, Clydesdale, Dundee, Edinburgh, Glasgow plasterers, Glasgow wrights, Inverness, Kilmarnock, Kirkcaldy, Oban, Paisley, Perth, Peterhead, St. Andrews, also the English deputation. The Secretary (Mr. James L. Selkirk) read the report of the Executive, which narrated at length their operations during the past year and the steps taken to extend and strengthen the organisation throughout the country. Expression was given to the resolution to promote still more vigorously the interests of the Federation in every district, and a scheme had been formulated with this end in view. A strong feeling was also expressed by a number of members in favour of appointing an organising agent. This, along with other matters, was remitted to the Executive for further consideration. Thereafter office-bearers were elected for the ensuing year—viz., Mr. Thomas Kay, wright, Glasgow, President; Messrs. Alex. Beveridge, builder, Perth, and Robert Lamb, builder, Edinburgh, Vice-Presidents; with Mr. James L. Selkirk, C.A., Glasgow, Secretary and Treasurer. A public meeting of gentlemen connected with the various branches of the building trades in Glasgow was held in the evening in the Building Trades' Exchange, 30, Gordon-street, Mr. Thomas Kay, President, in the chair, at which addresses were delivered by the deputation from England and other gentlemen. A meeting of tradesmen belonging to the various branches of the building trades was held within the Building Trades' Exchange in the evening, Mr. Thomas Kay, wright, President in the chair. The object of the meeting was to hear the objects and advantages of federation explained.

SANITARY ADVISER TO THE OFFICE OF WORKS.—It is stated that Dr. W. H. Corfield has been appointed Consulting Sanitary Adviser to her Majesty's Office of Works.

FUNERAL OF SIR ARTHUR BLOMFIELD.—The remains of the late Sir A. Blomfield were interred on the 3rd inst. at Broadway, Worcestershire. The Rev. H. Russell Wakefield, rector of St. Mary, Bryanston-square, officiated, assisted by the rector of the parish. The family mourners included Lady Blomfield, the Misses Blomfield (three), Mr. C. J. Blomfield, Mr. A. C. Blomfield, Mrs. Gurney, Mr. Reginald Blomfield, Mr. Frederick Blomfield, and Captain East, and there was a large gathering of the clergy and laity of the neighbourhood. Simultaneously with the interment a memorial service, which was largely attended, was held at St. Mary's, Bryanston-square, of which church Sir Arthur was a sidesman. The Archdeacon of London and the Rev. R. Dixon officiated. Archdeacon Sinclair delivered an address, in which he sketched the life and work of the late Sir A. Blomfield. Among those present were Sir John Taylor, her Majesty's Office of Works; the Archdeacon of Maidstone, representing the Dean and Chapter of Canterbury; Sir James Blyth, Sir William Robinson, Mr. Ouless, R.A., Mr. Frank Dicksee, R.A., Mr. A. Parsons, A.R.A., Mr. Kenneth Graham, Secretary of the Bank of England, Mr. Pinero, and Canon Hervey. The Royal Institute of British Architects was represented by the President (Mr. W. Emerson), Professor Aitchison, Mr. Alexander Graham (Hon. Secretary), and Mr. W. J. Locke, Secretary. There were also present, Mr. G. H. Fellowes Prynne, President of the Architectural Association; Mr. Aston Webb, A.R.A., Mr. E. W. Mountford, Mr R. Phené Spiers, Mr. Beresford Pite, and Mr. Paul Waterhouse.

LECTURES ON "ARCHITECTURE" AND "POMPEII," LIVERPOOL.—The first of a series of three lectures on "Architecture" was given in the Royal Institution, Colquitt-street, on Saturday morning, the 4th inst., by Mr. Arnold Mitchell. Following this course, another, also of three, is to be delivered by Mr. Whitworth Wallis, F.S.A., whose subject is "Pompeii, the City of the Dead." All the lectures will be accompanied by limelight views.

ECCLESIASTICAL AND DOMESTIC ARCHITECTURE IN YORKSHIRE.—At the Thoresby's Society's first meeting of the session, held on the 6th inst. at their rooms in Leeds, a paper was read by Mr. G. B. Bulmer on "Ecclesiastical and Domestic Architecture in Yorkshire." The paper was illustrated by lantern slide reproductions from Mr. Bulmer's drawings. Of church work there were some interesting studies of the Jacobean pulpits at St. John's, Leeds, and St. Alkeld's, Giggleswick, a font cover at St. Mary's, Kippax, a crucifix at Sherburn, a stall end at Wensley, the roodloft at Hubberholme, an arcade at Easby Abbey, a cloister door at Coverham Abbey, and an oak chest, probably an Easter tomb, at Cowthorpe. Domestic work was represented by the curious fireplaces at Altofts Hall and the Swan Inn, Knottingley; a bay window at Kiddal Hall, the principal entrance to King James' Palace at York, the unique entrance gate at Knowsthorpe Hall, with stone armchairs at the top of the steps, and a good doorway at Skipton Castle, showing heraldic carving.—*Yorkshire Post.*

AN EAST CUMBERLAND WATER SCHEME.—The parishes of Castle Carrock, Irthington, Hayton, and outlying parts of Brampton, Cumberland, have long been in need of an adequate supply of water. The Brampton Council accordingly decided to provide such a supply for both domestic and agricultural purposes, and early in 1898 instructed Mr. Harry W. Taylor, of Newcastle-on-Tyne and London, to prepare plans for obtaining water from several large springs in the Cumberland fells. Later in the same year the Carlisle Corporation sought and obtained an Act of Parliament to include these springs in the Geltsdale Water Scheme, giving a supply in bulk to the Brampton Council. The latter's scheme has in consequence been revised, and at their last meeting it was resolved to borrow 11,600*l.* for carrying out the works. There will be about twenty-eight miles of water mains and three service reservoirs holding some 175,000 gallons. This scheme will afford an abundant supply of water to the extensive dry and sandy districts of Hayton and Irthington.

CAPITAL AND LABOUR.

BUILDING TRADE, WEST BROMWICH.—The secretary of the West Bromwich and District Master Builders' Association (Mr. H. Smith, jun.) has received a notice from the operatives section claiming the following advanced rates and altered conditions:—Bricklayers' wages to be increased from 8½d. to 9d. per hour; time and a half to be paid for all work done during the night; no apprentices over eighteen years of age to be taken on; no firm to be allowed to have more than two apprentices at one time; no bricklayer to be allowed to teach more than one of his own sons the trade; labourers' wages to be advanced from 5½d. to 6½d. per hour.

THE LEEDS BUILDING TRADE.—The Leeds branch of the Manchester Society of Bricklayers, who dissociated themselves from the application of the London order for an advance of wages some months ago, have now served a separate notice upon the employers for an increase from 9d. to 9½d. per hour. This demand is ½d. less than that put forward by the London order, whose members are yet nominally out on strike. The notice will not expire for some time to come, and by the terms of the new working rules, signed the other day, no strike can be entered upon without a reference of any disputed matter to a joint committee equally representative of the masters and men. The contention of the bricklayers is that their application is justified by the present condition of the building trade. With regard to the relations of the employers and the London order, informal negotiations have been opened with the view of arriving at a friendly understanding.

LEGAL.

CASE UNDER THE 1894 BUILDING ACT.

MEESON *v.* GUARDIANS OF ST. LEONARD, SHOREDITCH.

AT North London Police-court, on the 3rd inst., the Guardians of St. Leonard's, Shoreditch, appeared by their Clerk, Mr. R. Clay, to answer a summons under the London Building Act, 1894, by Mr. F. Meeson, District Surveyor of Hackney, for occupying a public building in Lower Clapton-road without his certificate. Mr. Meeson said that in May last he found one of the old houses in Lower Clapton-road being used as a workhouse school. He required the Guardians to make certain alterations and to put in a fireproof staircase, but the matter was contested and fought out at that Court, the nominal penalty of 1s. being imposed on the Guardians. Since then nothing had been done to meet the requirements of the Act. As there was recently a fire at the house, he now thought it his duty again to bring the matter before the Court. Mr. Clay said that the Guardians were most anxious to meet the requirements of the Act, but plans had to be prepared, and the sanction of the Local Government Board obtained. Mr. Meeson said that the staircase could have been put in in three weeks. Mr. Fordham: And yet five months have gone by and nothing has been done. The Guardians must pay something substantial. The penalty is 40s. a day. Mr. Clay: It would be hard for the ratepayers to have to pay a heavy fine. Mr. Fordham: The Guardians will have to answer to the ratepayers for their delay. I shall impose a penalty of 2*l.* a day for twenty-five days—50*l.* and 14s. 6d. costs.

ACTION AGAINST A BUILDER FOR PERSONAL INJURIES.

THE case of Pavis *v.* Wills came before a Divisional Court of Queen's Bench, composed of Justices Ridley and Darling on the 4th inst., on the appeal of the defendant from the decision of a County Court Judge who gave judgment for the plaintiff in an action brought by him to recover damages for personal injuries.

It appeared that the defendant was a builder engaged in building houses at Battersea, and that he employed various sub-contractors to do different branches of the work. A man named Manhire was the sub-contractor for the bricklaying. Manhire constructed the scaffolding, and this the Court found was sufficient at the time it was constructed. Manhire, after he had completed his work, left the scaffold up for the use of the other sub-contractors, until he (Manhire) could do the pointing. During that interval, the plaintiff, who was in the employment of Jackson, a sub-contractor employed by the defendant for building manholes, was passing under the scaffold on his way to his work, when a slate fell through the scaffold and injured his thumb, which disabled him from work for some three or four months. The scaffold put up consisted of five planks and a guard board, and some one removed three planks and the guard board. There was a heap of slates upon the scaffold, and it was one of these which fell through the scaffold upon the plaintiff. At that time Manhire was not engaged on the job. The plaintiff then commenced the present action against the defendant to recover damages for the injuries he had received. The County Court Judge (after two trials) gave judgment for the plaintiff. Hence the present appeal by the defendant, he contending that he was not liable for the accident.

At the conclusion of the arguments of counsel their Lordships held that the defendant was liable on the ground that, although he did not actually provide the scaffolding in the first instance, there was evidence from which it might be properly inferred that he adopted it as provided for him and allowed it to be used by the other contractors, and to be there while they were working.

The appeal was therefore dismissed with costs.

Mr. Witt, Q.C., and Mr. Wildy Wright appeared for the appellant (defendant), and Mr. Lambert for the respondent (plaintiff).

BUILDING LINE DISPUTE, HALIFAX.

THE case of Shoesmith *v.* Dodd, Limited, came before Mr. Commissioner Bosanquet on the 4th inst., on a further consideration of a case which was heard before him at the Leeds Assizes.

It appeared that in the year 1871 some land at Halifax was sold by auction, one of the conditions of sale running as follows: "All buildings shall be erected in accordance with the building line shown upon the plan, and all buildings, stables, and conveniences shall be placed on the westerly side of the lot." The building line was 60 ft. from the road, which was on the east side of the lot. The plaintiff at the auction bought two lots at the south end of the land, the lots adjoining the north side of his lots being unsold. The condition of sale in question was incorporated in the form of a convenant in the conveyance taken by the plaintiff. The plaintiff built on his lots a house in accordance with the conditions of sale, and on March 1, 1897, leased it to a tenant for seven years, the lease to be determinable at the option of the tenant at the end of five years. On November 6, 1897, the plaintiff, by letter, agreed to allow the tenant to remove at the end of the term a movable billiard-room, which the tenant proposed to erect on the front side of the house, this side being the east side. The billiard-room, which was 32 ft. long by 26 ft. wide and 17 ft. 6 in. high, and which stood 10 ft. back from the road, was accordingly erected in November, 1897. The room had brick foundations, upon which were laid sleepers embedded in mortar, and upon the sleepers were timbers which were secured to the foundations by bolts. Then wooden sides were erected in sections, and the whole was covered with a corrugated iron roof. Before the issue of the writ in the action the room had been removed. On July 22, 1898, the lots adjoining the plaintiff's lots were again put up to auction, and the conditions of sale again included that set out above. The plaintiff was the auctioneer, and, previous to the sale, he stated that the lots were subject to a building line covenant. The defendants bought the lots and took a conveyance containing a covenant similar to that in the plaintiff's conveyance. The defendants then expressed their intention of building right up to the frontage of the road and the plaintiff brought the present action for an injunction to restrain them from erecting any buildings in front of the building line. The defence was that the plaintiff's action in permitting the erection of the billiard-room had disentitled him to obtain that form of relief.

At the conclusion of the arguments the learned Commissioner held that the evidence proved that the defendants had full knowledge, both of the billiard-room and also of the restrictive covenant. He said that defendants took notice of the billiard-room, not as something which would injure them, but as something which they might use as a pretext to ignore their covenant. The injunction would be granted, with costs.

Mr. Scott Fox, Q.C., and Mr. Bairstow appeared for the plaintiff and Mr. Tindal Atkinson, Q.C., and Mr. Manisty for the defendants.

WEST END LIGHT AND AIR DISPUTE.

MR. JUSTICE STIRLING on the 4th inst. delivered judgment in the case of Viscount Cranborne and Another *v.* Young and Another, on a motion by the plaintiffs for an injunction to restrain the defandants from building in such a way as to interfere with the access of light and air to their house. The plaintiffs are the owners and occupiers of No. 24, Grafton-street, W., and the defendants are engaged in erecting a large building on the site of Ashburnham House, which has a frontage on the same street. It appeared that the solicitors and architects of the parties had negotiated for a considerable period before the writ in the action was issued, and in the result the defendants agreed not to build except in accordance with the plans of Mr. Gruning, architect, who had made a report on the matter.

On these terms, his Lordship made an order that the defendants should pay the costs of the action down to the present time, the formal report of Mr. Gruning to be filed.

Mr. Butcher, Q.C., M.P., appeared for the plaintiffs, and Mr. Martelli for the defendants.

A LEAKY ROOF AND A LANDLORD'S LIABILITY.

AT the Leeds County Court, on the 3rd inst., Mr. J. C. Kershaw, surgeon, New Wortley, sued Mr. T. Eddison, his landlord, for 7*l.* 3s. 7d., for breach of covenant. Mr. Felix Palmer (instructed by Messrs. Harland & Ingham) appeared for the plaintiff, and Mr. W. J. Waugh (instructed by Messrs. J. Bowling & Sons) for the defendant.

In October, 1894, the plaintiff took the house in question on a lease for ten and a half years, at 54*l.* a year, from the defendant, the agreement stipulating that the plaintiff was to keep the inside of the house in good repair, and the defendant to repair the exterior. Soon after entering the premises in November, 1895, the plaintiff found that the roof of the surgery, which had been built by his predecessor, was in very bad condition. The lessor put on new slates, but the roof, which was flat and had a skylight, was stil leaky, and plaintiff wrote to him repeatedly, informing him that from time to time water came through into the surgery, causing pools to collect on the floor, wetting all the chairs, so that his patients could not sit down, and that he had lost one patient in consequence, and suffered continual inconvenience. As nothing was done by the lessor to remedy the defect up to March, 1898, the plaintiff consulted Mr. Winn, architect, and, at his suggestion, had the roof stripped and reslated, the total cost of the repairs (including Mr. Winn's fee) being 7*l.* 3s. 7d., the amount of the claim.

Mr. Waugh submitted that there had been no breach of the covenant, inasmuch as there was nothing in the agreement binding the lessor to keep the premises wind and water-tight. The common-law liability of the tenant was to keep the premises wind and water-tight, unless the agreement expressly stipulated that this liability should fall on the landlord. What the lessor agreed to do in this case was to keep the premises in repair, not to carry out any reconstruction, which was practically what the plaintiff had had done.

His Honour gave a verdict for the plaintiff for the amount claimed, less the architect's fee of two guineas, with costs.—*Yorkshire Evening Post.*

SUITABLE FOR THE WORK, YET DANGEROUS:

EMPLOYER LIABLE.

AT Brompton County Court, on Tuesday, before Judge Stonor and a jury, Thomas Jones, a labourer, living at Chelsea, S.W., claimed damages, under the Employers' Liability Act, from Mr. Charles Wall, builder, Chelsea, for personal injuries sustained, it was said, through negligence for which the defendant was responsible.

Mr. Thompson was counsel for the plaintiff, and Mr. Clavell Salter, counsel, defended.

For the past twelve months or so, said the plaintiff, he had been in the employ of the defendant, and on April 6 last was working at a shed in course of erection at the Great Northern goods station, Kings' Cross. This shed was constructed of iron pillars with girders across. Upon the top was laid a concrete floor, a large wooden "drum" being used beneath temporarily. Rain had been falling almost the whole of the afternoon, and before leaving the work for the night, the foreman told plaintiff and some other men to cover the newly-laid concrete with some old tarpaulins. The tarpaulins were the property of the railway company, but being more or less torn or otherwise damaged, they were marked in blue letters, "Condemned." They had just spread a large tarpaulin over the concrete, and plaintiff was in the act of pulling a rope at one corner to stretch the cover and get it straight. Suddenly, however, something gave way, and he fell between the girders a distance of nearly 20 ft. to the ground. By the fall, he sustained a broken leg and badly sprained the other leg. He was conveyed to the Royal Free Hospital, where he was detained for a fortnight and three days, afterwards attending as out-patient until September 4.

The Judge: Was the rope attached to the tarpaulin?—The plaintiff: No, sir, it was fastened.

Continuing, the plaintiff said that he had been earning 7d. an hour, averaging 1*l.* 9s. 2d. a week, exclusive of overtime.

The Judge: Had you used such coverings before for the concrete?—Plaintiff: Yes, sir, scores of times.

By order of the foreman?—Yes, sir.

Mr. Thompson: Did you call the foreman's attention to the state of the tarpaulin?—Plaintiff: No, because he knew of it. There were blue letters on them, "Condemned."

Plaintiff (cross-examined): He was still in the defendant's employment. The concrete had to be covered up every night, and he had often helped to put the tarpaulins on. Although there was only an open space behind him, and he did not know whether the tarpaulin was rotten or not, he thought he was right in pulling, because he was told to do so.

Charles James Matthews, a general labourer, who had assisted in spreading the tarpaulin in question, gave a similar account of the accident.

Cross-examined: They were supposed to put old sacks or any rough covering they could find over the concrete, because whatever they used got in a filthy mess. The old discarded tarpaulins were perfectly suitable for covering over the work.

Mr. Clavell Salter, for the defence, submitted that no evidence had been given as to negligence on the part of his client.

The Judge: Yes, there is evidence of neglect in the man being set to do such work. The evidence is that he was set to do the work by the foreman. Have you the rope here?

Mr. Clavell Salter: It is admitted that the rope broke. The learned counsel went on to say that the facts already brought out in evidence would not be disputed, and that he thought it would only be waste of time to call any witnesses.

The jury found that there was negligence in the foreman ordering the plaintiff to use the tarpaulin without previously examining it; that the plaintiff was not guilty of contributory negligence, and they assessed the damages in the plaintiff's favour at 50*l.*

His Honour gave judgment accordingly, allowing costs.

ACTION AGAINST AN ARCHITECT.

THE hearing of the case of Chessum & Sons *v.* Gordon was concluded on the 8th inst., before the Lord Chief Justice and a special jury, in the Queen's Bench Division. It was an action brought by the plaintiffs, a firm of builders, against the defendant, Mr. H. Huntley Gordon, architect, to recover 5,934*l.* 8s. 3d., which they alleged to be due in respect of buildings erected by the plaintiffs for the defendant in the City, under an agreement dated April 7, 1898, supplemental to an agreement of December, 1897. The plaintiffs also claimed damages for breach of the agreements. The defendant denied that he made the agreement of April, 1898, and counterclaimed for damages for alleged breaches of the agreement of December, 1897.

It appeared that the plaintiffs in December, 1897, entered into a contract with the defendant to erect for the sum of 7,500*l.* a large block of buildings between Bread-street and Cannon-street. The defendant acted as his own architect. By the contract it was provided that the ground floor of the buildings should be completed by March 25, 1898, and the whole of the building by June 24, 1898, penalties being provided for in case of delay During the course of the building disputes arose on the subject of extras, but the building proceeded The defendant desired to carry his buildings higher than the buildings which formerly stood upon the site, and it was said that he believed that if he succeeded in carrying the buildings up beyond the old height before an injunction was obtained against him by owners of the property on the opposite side of Bread-street for infringement of ancient lights, the Judge, instead of ordering him to pull down his building, would merely order him to pay compensation. On March 27 the defendant went to Italy for his health, but before going he had instructed the plaintiffs' foreman, it was said, as soon as the old height was reached, to rush up the work; and he also left instructions with his solicitor, Mr. Danvers, to deal with any difficulties which might arise. Accordingly, Mr. Danvers, on April 7, entered into a new agreement with the plaintiffs, by which it was stipulated that they should rush up the wall opposite Bread-street, it being agreed that no action should be taken in respect of the plaintiffs' failure to complete the buildings by the time stipulated, and that the plaintiffs' claims as to extras should be admitted. A Judge of the Chancery Division, however, subsequently by a mandatory order compelled the defendant to pull down the wall so far as it exceeded the former limits. When the agreement of April 7, 1898, came to the defendant's knowledge, he repudiated it, and in May he evicted the plaintiffs from the works on the ground that they had not complied with the contract of December, 1897. The plaintiffs then commenced the present action, claiming to be paid for the work done by them, together with damages for the injury to their reputation by the eviction. The defendant's case was that he gave no authority to Mr. Danvers to deal with the matter of "rushing up," but alleged that his authority to that gentleman was limited to dealing with the disputes as to the extras. The defendant also counterclaimed for the loss occasioned to him by the mandatory injunction.

After hearing evidence, the only issue left by his Lordship to the jury was as to whether Mr. Danvers had authority to make the agreement of April 7, 1898, and the jury answered the question in the affirmative. It being conceded that in this event the eviction was wrongful, the issue relating to that matter was dropped, and the case was referred to Mr. Herbert Steward, the arbitrator agreed on by the parties, to find the amount due to the plaintiffs for the eviction.

Mr. Reginald Bray, Q.C., and Mr. Alfred A. Hudson appeared for the plaintiffs; and Mr. Foote, Q.C., and Mr. Montague Shearman for the defendant. Mr. Frank Dodd held a watching brief on behalf of Mr. Danvers.

MEETINGS.

FRIDAY, NOVEMBER 10.

Architectural Association.—Mr. W. Brindley on "Marble." 7.30 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Dr. Reginald Dudfield on "The Practical Duties of a Sanitary Inspector." 8 p.m.

The London School of Economics and Political Science (10, Adelphi-terrace, W.C.).—Mr. Hirst on "Recent Developments of the Law Relating to Drainage." I. 7 p.m.

Glasgow and West of Scotland Technical College (Architectural Craftsmen's Society).—Mr. J. Arthur on "Estate Feuing Plans, and their Preparation. 8 p.m.

SATURDAY, NOVEMBER 11.

Architectural Association of Ireland.—Visit to the Franciscan Convent, Merchant's Quay, by permission of the architect, Mr. W. Doolin. 2.45 p.m.

Sanitary Institute (Demonstrations for Sanitary Officers).—Inspection at the Sewage and Destructor Works, Ealing. 2.15 p.m.

MONDAY, NOVEMBER 13

Surveyors' Institution.—Address by the President, Mr. T. M. Rickman. 8 p.m

London Institution.—Mr. H. B. Wheatley on "The Tower of London: Fortress, Palace, and Prison." Illustrated. 5 p.m.

Sanitary Institute (Lectures for Sanitary Officers).—Sir R. Thorne Thorne on "The Sanitary Inspector in Relation to the Public Health Service." 8 p.m.

University College, Gower-street.—Dr. S. Rideal on "Sewage and its Purification." II. 5.30 p.m.

TUESDAY, NOVEMBER 14.

Institution of Civil Engineers.—(1) Mr. H. H. Dalrymple-Hay on "The Waterloo and City Railway;" (2) Mr. B. M. Jenkin on "The Electrical Equipment of the Waterloo and City Railway." 8 p.m.

Sheffield Society of Architects and Surveyors.—Mr. J. R. Wigfull on "Some Old Derbyshire Houses."

WEDNESDAY, NOVEMBER 15.

Society of Arts.—Opening Address of the One Hundred and Forty-Sixth Session, by Sir John Wolfe Barry, F.R.S., Chairman of the Council. 8 p.m.

British Archæological Association.—Mr. T. Cann Hughes on "A Ramble in Devon." 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

Northern Architectural Association.—Opening meeting of the Session. The President, Mr. Wm. Glover, will deliver his Inaugural Address. 7.30 p.m.

THURSDAY, NOVEMBER 16.

Carpenters' Hall, London Wall (Lectures on Sanitary Building Construction).—Mr. J. Bartlett on "Setting-out Work and By-Laws." 7.30 p.m.

Institution of Electrical Engineers.—The President, Professor Silvanus P. Thompson, D.Sc., F.R.S., will deliver his Inaugural Address. 8 p.m.

Institute of Sanitary Engineers.—Mr. James Ashton on the "Treatment of the Sewage of Wigan." 8 p.m.

FRIDAY, NOVEMBER 17.

Architectural Association Discussion Section.—Mr. R. Williams on "Tenement Houses for the Working Classes."

The London School of Economics and Political Science.—Mr. Hirst on "Recent Developments of the Law Relating to Drainage." II. 7 p.m.

SATURDAY, NOVEMBER 18.

Dundee Institute of Architecture.—Visit to villa in West Ferry.

RECENT PATENTS:

ACCEPTED SPECIFICATIONS.

Open to Opposition until January 1.

[1898] 5,339, Lardeur, Apparatus for Converting Light Waves into Electrical Waves for the Transmission of the Latter to a Distance, and for Reconverting such Electrical Waves into Light Waves, also for Recording the Waves upon Prepared Surfaces. 18,483, Steiger, Cement. 22,261, Ries, Metal Tubing and Use of the Heating Effect of Electrical Energy in connexion therewith. 22,272, Williamson, Generating, Purifying, Storing, and Distributing Acetylene Gas: see also 25,227, and [1899] 10,151, and 17,631. 22,404, Kastens, Protection of "French" and similar Windows. 22,747, Wilcke, Haulage on Road, Plate, and similar Ways. 23,145, Dennis, Prepayment Machines. 23,386, Bourgoin, Fine Alloy for Aluminium. 23,751, Jones, Circular-saw Guard. 23,981, Springfellow, Waterproof and Acid-proof Compounds. 24,378, Engels, Fire and Acid-proof Bricks, Slabs, and other Earthenware Articles or Structures. 24,582, Willoughby, Refuse Destructors. 24,593, Rhodes and Miners' Lamp Electric Lighting Company, Lighting of Miners' and other Lamps by means of an Electrical Current. 24,762, Campanato, Decoration of Articles of Wood, Stone, Metal, Glass, &c. 24,957, Woodward & Collier, Fettling, Cutting-off, Scratching, and otherwise Finishing Sanitary Pipes whilst in a Plastic or Half-dried Condition. 25,227, Thubron, Acetylene Gas Generators for Lamp and Other Apparatus. 25,260, Nunns, Electricity Meters. 25,384, Whitaker, Steam Derrick Cranes and Excavating Apparatus. 25,492, Frank, Means of Opening and Closing Acetylene and Other Lanterns. 25,662, Constable & Sawbridge, Locks and Latches with Reversible Latching Bolts. 25,959, Taylors, Jawed Chucks. 25,988, Gwynne & Sargeant, Centrifugal Pumps. 26,154, Tschernoff, Heating by Electricity. 26,221, Missires, and 26,856, Kayser, Incandescent Gas Mantles. 26,572, Moore, Regulation of Sliding Window Sashes in their Frames. 26,923, Youngs, Hooks for Cranes and Other Lifting Machinery. 27,608, Wells, Fencing for Grain Ricks, &c. [1899] 208, Kreidler, Wire Covering Machines. 786, Algar, Sash Fasteners. 1,042, Backhouse, Connecting Device for Liquid-conducting Pipes. 9,374, Sidebottom, Enclosed Water Wheels, &c. 10,151, Steiner, Generation of Acetylene Gas. 10,798, Wheeler & Eells, a Substitute for Wood and Stone, and for Moulding Hollow Ware, &c. 11,135, Worshop, Acetylene Lamps. 11,208, Scholefield, Glazing Roofs and Structures. 11,646, Ravené, Devices for Securing Incandescent Electrical Lamps in their Sockets. 14,377, Okes, Covers for Man, Hand, and Other Holes in Vessels Subjected to Internal Pressure. 14,955, Batcheller, Pneumatical Transmission Systems. 15,760, Zacher, Self-lighting Gas Burners. 16,142, Hale & Woolman, Automatical Fire Alarms. 16,378, Dowie & Faramel Manufacturing Company, Composition for Driving Away Rats and Other Vermin. 16,454, Nichols, Drying Veneers, &c. 17,049, Palmer, Ventilation of Sewers, &c. 17,202, Brown, Seat for Shop Assistants. 17,232, Prost, Water Heaters for Baths. 17,263, Siemens & Halske, A. G., Electrical Measuring Instruments. 17,386, Guett, Snap Electrical Switches. 17,454, Andersons, Support for Overhead Electrical Conductors. 17,631, Richard & Cahen, Generation of Gas having Acetylene as a Base. 17,648, Patton & Grant, Fire Extinguisher. 18,378, Arnold, Clamps. 18,379, Ashley, Plug Taps and Valves. 18,863, Monkhouse, Friction Clutches. 19,142, Roberts, Drawing-board Rest. 19,379, Krőhnke, Method of Purifying Water.

ABSTRACTS OF PATENTED INVENTIONS.

14,918.—MIXING CONCRETE: *A. H. Owles.*—The container, in its ascent to the discharge-shoot, is made to rotate by means of rack and pinion gearing, and, if a locomotive is used, may be taken to any discharging point desired; the incline may be pivotted so that it can be raised or lowered, or the drum may be rotated through the engagement of its pinion with a pitch chain.

14,964.—CIRCULAR-SAW GUARDS: *A. S. F. Robinson.*—The tip bar is pivotted to the front bar of a frame which is pivotted to the saw-bench, and is automatically lifted by the wood in its advance; a riving-knife is affixed to the frame at the back of the saw.

14,974.—SCAFFOLDING: *F. Knopfe.*—The standards are supported by sockets or shoes bolted on to foundation beams lying along the ground. They have perforated lugs for diagonal tie-rods, and are joined together in a line with other sockets and shoes. So as to break joint, one standard passes through the socket, whilst the ends of the other standards bear against a rib of the shoe, the shoes being recessed for the put-logs, and having lugs for diagonal tie-rod. The screwed tie-rods can be tightened with nuts, or with right and left hand screwed nuts or shackles. Should the ground be uneven, a foot or plate is pivotted to an adjusting screw through a flanged nut within a recess in the foundation beam.

14,997.—TREATMENT OF SEWAGE AND FOUL WATERS: *G. D. Wild.*—Sewage, as well as effluents from dye works, &c., is agitated within a tank by currents of air or gas which are forced in through a series of pipes that are closed at one end, and have side holes. A precipitant is then mixed with the sewage, which, after having been again agitated by air currents, can be allowed to settle, or can be run directly on to the land.

15,038.—SASH FASTENERS: *E. Harrison.*—To the upper sash is fixed a block on to whose horizontal pivot is pivotted the fastening lever, when the lever is pulled down (for fastening the window) a spring-held bolt engages in a socket formed upon the block, the bolt being mounted in the fastening lever and joined to the pull-plate, which frees it from the socket, a projection upon the pull-plate engages with the catch that is secured to the lower sash by a base-plate.

15,047.—DRAIN AND OTHER OUTFALLS: *F. G. S. Ham and E. Beard.*—In order to prevent the back-flow of flood or tidal water, the drain or sewer is made to discharge into an intercepting tank through an inlet, which is provided with a swivelling-pipe carrying floats so arranged that when back-flow happens, the swivelling pipe rises. If the water reaches to higher than ten feet in the tank the moving area is caused to operate a valve in the inlet pipe.

15,068.—CUTTING HOLES IN CORRUGATED SHEETS: *H. W. Headland.*—For cutting holes in sheets of celluloid, vulcanite, glass, and so on, for use, say, as separators in electrical batteries, the saws are mounted on one shaft, and by cutting through the tops of the corrugations, make slots at intervals in the sheets—the slots may be cut angle-wise or cross-wise, whilst for cutting glass emery wheels are used in place of the saws.

15,115.—PLASTIC COMPOUNDS: *J. Macneil.*—Dried skins, sinews, and similar gelatinous animal tissues are powdered in a shredding or disintegrating machine and then mixed with glue or gelatine soaked in water, to the admixture is added some bichromate of potash and carbolic acid, the mixing being made in a heated pan, or by means of a mincing machine in a steam-jacket that heats the drum to not above 250 deg. Fahr. The compound may be rolled into sheets or it may be moulded, and is designed for use in the place of wood, gutta-percha, &c.

15,149.—ELECTRICAL ARC LAMPS: *Stralsunder Bogenlampenfabrik G. M. B. H.*—Shunt and series coils, which act independently, controul the clockwork feed, whereby the feeding occurs only when the current is below normal, and the pressure above normal, at one and the same time; another series coil strikes the arc acting upon a core which carries the upper carbon hung (in one form) by a chain with a counterweight and gearing, of which the latter drives an air fan; when the current is below normal the series coil moves a horizonal lever in direct opposition to a spring that holds the lever below and clear from the air fan, whilst a shunt coil with a fixed core acts upon an armature held by a spring in such a manner that its arm engages with a star-wheel upon the fan spindle unless the pressure is above normal.

15,160.—ELEVATORS AND HOISTS: *R. Jackson.*—The appliance is designed to automatically hold the falling chain and buckets when the former breaks; upon the framing is mounted a spring pawl which is joined by levers and a rod to another pawl so that they may engage with the chain in its fall, at the same time the latter paul will be thrust outwards, so as to engage with the chain's other side.

15,215.—PARQUETRY FLOORS: *Alexander, Baron of Hammerstein-Loxten.*—By means of using a grooved iron gauge, block nails are driven into the joists so as to project a certain distance; the nails are then knocked sideways to make their heads enter the edges of inlaid or thin flooring-boards, and a slotted steel or metal plate is forced beneath each nail's head into the board, the adjacent board being forced against the plates until it ranges with the former board.

15,283.—SIPHONS, TRAPS, AND WATER-WASTE PREVENTERS: *P. J. Davies.*—The invention embodies certain improvements upon those of No. 8,614 of 1896; for preserving the seal in siphon closets, a small cistern provided with a ball-cock is arranged near the basin so that it may discharge its contents into the basin, and seal the outlet after each flush; the basin and siphon-trap may be made in one piece, the outlet being jointed to the outlet siphon in such a manner that it may be turned round through an angle; for valve discharge, a false bottom is bolted into the cistern in order to form an after-flush compartment, and upon a seat made in the false bottom bears the main valve (after the sucker type); a weighted sucker disc raises the main valve, together with its guiding stem, from the seat, and is freed in the ordinary manner by leakage into the valve chamber; similarly, after-flush chambers may be fitted on to siphon-cisterns.

15,337.—SECURING WOODWORK, LININGS, PLASTER, &C., TO WALLS, FLOORS, AND CEILINGS: *D. Katz.*—For floors constructed of bent sheet-metal bars resting upon the flanges of I-shaped girders and supporting blocks or tiles with a layer of concrete, hooks or nails are driven in between the webs of the bars, so as to carry a network of reed matting or similar material for the ceiling, curved grooves being formed in one half or both halves of the bar, and also in the bricks or blocks to receive nails; and wooden facing-strips may be nailed on to the blocks; between the cement in the mould and the wood is inserted a layer of paper or asphalt.

25,375.—LATRINES: *S. H. Adams.*—In order to ensure a simultaneous action, the inventor contrives that the closet discharge valve shall be joined to the flushing valve, the flush being directed to pass along a main and branch pipes to the several basins, and thence to the common outlet beneath the discharge valve. An after-flush is provided for by means of a siphon.

15,422.—CABLE SAWS FOR SAWING STONE: *A. Monticolo.*—The cable saw is adjusted to run over a grooved disc, which is pivotted in a tube, guided and fed within a bore-hole. The disc's edge is serrated that it may the more easily cut its own way.

15,431.—SCAFFOLDS, LIFTS, &C.: *F. Nack.*—The contrivance consists of a lifting platform which is set upon the upper end of a range of "la reg tongs," cross bars, from front to back, are drawn together in order to raise the lift by a right and left screw moved by the hand, as the tongs approach one another a uniform velocity is obtained by making the screw increase in its pitch; the apparatus is adapted also for use with a look-out station or a scaffold.

15,489.—DRYING CEMENT SLURRY, CHINA CLAY, &C.: *C. Erith.*—An oppositely directed current of hot air or gases is driven against the material placed within a set of chambers of the drying-apparatus or kiln, sliding or hinged discharge doors are fitted on to the tanks, which rest on racks; the furnace, which has an air-opening in its side, is provided with fans, which draw hot gases to pass by a flue and openings into the drying-chambers, whence they pass through more openings and an additional flue.

15,496.—ELECTRICAL TIME SWITCHES: *T. B. Browne and F. L. Martineau.*—Two cams, adjusted upon an axle, which is driven by a clock or other mechanism, move a pivotted switch arm in order to make or break contact, wheels fitted with pointers serve to adjust the cams which are mounted upon sleeves, a dial showing the time, and a quick break being ensured by a spring or similar means.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

October 9.—By FERRIS & PUCKRIDGE (at Pewsey).

Pewsey, Wilts.—Haybrook and 13 a. 2 r. 22 p., f.	£2,500

October 18.—By FERRIS & PUCKRIDGE (at Bradford-on-Avon).

Broughton Gifford, Wilts.—Broughton House Farm, 89 a. 0 r. 39 p., f.	4,600
Bradford-on-Avon, Wilts.—Little Ashley Farm, 156 a. 2 r. 35 p., f.	3,200

October 30.—By ELLIOTT, SON, & BOYTON.

Paddington.—6, Alexander-st., u.t. 49½ yrs., g.r. 9*l.*, r. 60*l.*	555
Hampstead-rd.—13 and 14, Mornington-cres., u.t. 19 yrs., g.r. 24*l.* 12s., r. 130*l.*	750

By HARDS & BRADLY.

Deptford.—32, 34, and 36, Idonia-st., u.t. 57 yrs., g.r. 7*l.* 4s.	715
Greenwich.—Diamond-ter., Erfurt Lodge, u.t. 21½ yrs., g.r. 8*l.*, e.r. 80*l.*	525

By HOLCOMBE, BETTS, & WEST.

Paddington.—46, Portnall-rd., u.t. 79 yrs., g.r. 7*l.*, r. 36*l.*	350

By HAMPTON & SONS.

Clerkenwell.—37, Goswell-rd., and 1, 2, 3, and 4, Great Sutton-st., u.t. 21 yrs., g.r. 60*l.*	3,025
7 and 9, Berry-st., and 45, 46, 47, and 48, Little Sutton-st., u.t. 21 yrs., g.r. 25*l.*	1,110
50 to 54, Little Sutton-st., u.t. 21 yrs., g.r. 25*l.*	1,050
49, Little Sutton-st., u.t. 21 yrs., g.r. 30*l.*	800
Holloway.—67, Hilldrop-cres., u.t. 54 yrs., g.r. 12*l.*, r. 85*l.*	825
Hampstead.—78, Adelaide-rd., u.t. 47 yrs., g.r. 5*l.*, r. 70*l.*	845
Highbury.—18, Highbury New Pk., u.t. 50½ yrs., g.r. 21*l.*, r. 110*l.*	1,050

By JOHN BOTT & SONS.

Walthamstow.—5 and 7, Chingford-rd., u.t. 99 yrs., g.r. 9*l.* 5s.	450
Brixton.—9 and 10, Western-rd., u.t. 23 yrs., g.r. 10*l.*, r. 72*l.*	565
Epsom.—Burgh Heath-rd., South View, f., r. 52*l.* 10s.	800

By CHEATLE & HALL (at Rugeley).

Rugeley, Staffs.—An enclosure of land, 5 a. 1 r. 27 p., f.	130
Upfield enclosure, 3 a. 2 r. 27 p., c.	240

October 31.—By G. W. & H. G. POTTER.

Hampstead.—Vale of Health, North Villa and South Villa, f., r. 63*l.*	1,060

By WALTER SIMMONDS.

Camberwell.—5, Baldwin-cres., u.t. 68 yrs., g.r. 10*l.*, e.r. 65*l.*	700
113, Farmer's-rd., u.t. 45½ yrs., g.r. 3*l.* 10s. r. 42*l.*	395
44, New Church-rd., f.	450

By F. C. SQUIRE & CO.

Sydenham.—Burghill-rd., Alde Cottage, u.t. 97 yrs., g.r. 6*l.* 10s., e.r. 35*l.*	300
52, West-hill, u.t. 52 yrs., g.r. 15*l.*, r. 70*l.*	675

By E. & A. SWAIN.

Willesden.—3, The Ravenscroft, u.t. 81 yrs., g.r. 4*l.* 15s., e.r. 36*l.*	230

By THORNTON & NEWMAN.

Wandsworth.—Alma-rd., &c., f.g.r.'s 49*l.*, reversion in 76 yrs.	1,280
Birdhurst-rd., f.g.r.'s 159*l.*, reversion in 77 yrs.	4,140
Fulham.—New King's-rd., &c., f.g.r.'s 71*l.*, reversions in 84 and 80 yrs.	2,110
Everington-st., &c., f.g.r.'s 82*l.* 10s., reversion in 79 yrs.	1,985
Aspenlea-rd., f.g.r.'s 49*l.* 10s., reversion in 80 yrs.	1,190
Greyhound-rd., &c., f.g.r.'s 111*l.*, reversion in 80 yrs.	2,740

By FIELD & SONS.

Hackney.—6, Hackney-rd., f., r. 60*l.*	1,070
Anerley.—26, Jasmine-grove, f., e.r., 35*l.*	630

By NEWMAN & NEWMAN.

Aldgate.—New-st., f.g.r.'s 98*l.* 10s., reversion in 24 yrs.	4,320
New-st., "The Sir Walter Raleigh" p.-h., f.g.r. 10*l.*, reversion in 24 yrs.	1,600
New-st., &c., f.g.r. 37*l.* 10s., reversion in 24 yrs.	1,700

By DEBENHAM, TEWSON, & CO.

Regent-st.—5, Boyle-st., f., r. 110*l.*	2,650
Pimlico.—56, Alderney-st., u.t. 32 yrs., g.r. 8*l.* 10s., r. 60*l.*	550
Brompton.—21 and 22, Ovington-mews, u.t. 65½ yrs., g.r. 2*l.*, r. 50*l.*	500

By SAWDYE & SON (at Ashburton).

Widecombe-in-the-Moor, Devon.—Hannaford House and Lower Hannaford Farm, 91½ a., f.	4,700

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
*Dunoon, East Bay Improvement Scheme	Burgh of Dunoon	100*l.*; 50*l.*; and 25*l.*	Jan. 31

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Pipe Laying, &c.	Amble U.D.C.	W. Gibson, Surv. 21, Queen-st. Amble	Nov. 14
Flagging, Paving, &c. Accrington-road Schools	Blackburn Sch. Bd.	Cheers & Smith, Archt. 24, Richmond-terrace, Blackburn	do.
Asphalting, French-street	Southampton Corp.	W. B. G. Bennett, Boro Engr. Municipal Offices	do.
Two Cottages, Station-road, Shortlands	Beckenham U.D.C.	J. A. Angell, Surv. Council's Offices	do.
Cast Iron Mains	Midland Ry. Co.	A. L. Charles, Midland Station, Derby	do.
Villa, Ballygomartin, Belfast		T. Pentland, Archt. 35, High-st. Belfast	do.
Sewerage Works at Sewage Farm	Cuckfield (Sussex) R.D.C.	J. Mansergh, Engr. 5, Victoria-st. Westminster, S.W.	Nov. 15
Electricity Works	Hoylake & West Kirby U.D.C.	T. L. Miller, M.I.E.E. 7, Tower-bldgs. N. Water-st. Liverpool	do.
Sewerage Works (12 miles)	Morecambe U.D.C.	Beesley, Sons & Nichols, C.E. 11, Victoria-street, S.W.	do.
Sewers, &c, Hanson-lane	Halifax Corp.	E. R. S. Escott, C.E. Town Hall	do.
Earthenware Pipe Sewer, Colbeck-street	do.	do.	do.
Wrought Iron Tanks and Cast Iron Columns	Uganda Rly. Commte.	Crown Agents for the Colonies, Downing-street, S.W.	do.
Iron Pipes, &c.	Manchester Corp.	City Surveyor, Municipal Offices	do.
House, Argyle-terrace, Alnmouth	R. Stanton	W. T. Wilson, Archt. Alnwick	do.
Baptist Church, Victoria-st. Morecambe		N. G. Lewis, Archt. Church-st. Morecambe	do.
Six Houses, Hollymount, Bedlington	Co-op. Soc.	R. Studdy, Co-op. Soc.'s Offices, Bedlington	Nov. 16
Drainage Works at Workhouse	Dursley Union	J. G. Wenden, Board Room Workhouse, Dursley	do.
Water Supply Works	Runcorn R.D.C.	G. F. Ashton, 71, High-st. Runcorn	Nov. 17
Plant for Railway	Assam-Bengal Rly. Co.	P. A. Lyall, 55 & 56, Bishopsgate-st. Within, London, E.C.	do.
Slag, &c.	Walsall R.D.C.	F. W. Mager, Dist. Surv. Aldridge	do.
*Laying and Draining Bognor New Cricket, &c Field		W. Tickle, 80, High-st. Bognor, Sussex	Nov. 18
*Cast Iron Socket Pipes, &c.	Much Wenlock Sanitary Commte.	W. Wyatt, Bryndwr, All Saints, Shrewsbury	do.
Road Works, North-street	Rugby U.D.C.	D.G. Macdonald, C.E. Rugby	do.
Villa, Beckermet, Cumberland		J. S. Moffat, Archt. Whitehaven	do.
Hall and Institute, and 20 Cottages, Broughton Moor, Cumberland	Flimby Colliery Co.	Donald & Tate, Archts. 14, John-st. Workington	do.
Two Semi-detached Houses, Knaresborough	L. Ancelle	J. Gavin Brown, Archt. Knaresborough	do.
*Supply of Cast-iron Lamp Columns	Hornsey U.D.C.	E. J. Lovegrove, 99, Southwood-lane, Highgate, N.	Nov. 20
C.I. Pipes (10 miles)	Glasgow Corp.	Sir J. Marwick, City Chambers, Glasgow	do.
*Construction of Pipe Sewers, &c.	Cty. Boro of Croydon	Boro Engr.'s Office, Town Hall, Croydon	do.
Large Engine Shed, Clones, Ireland	G. N. R. Co. (Ireland)	T. Morrison, Amiens-st. Terminus, Dublin	do.
Culvert, Green Hall-lane	Disley R.D.C.	E. N. Davenport, County Chmbrs. Market Place, Stockport	do.
*Putting Down a Bore Tube, &c.	Chipping Campden R.D.C.	N. Lailey, 16, Gt. George-st. Westminster	Nov. 21
Rail Shed, Pendleton	Salford Corp.	Boro Engr. Town Hall	do.
Stables, &c. Accrington	L. & Y. Ry. Co.	R. C. Irwin, Hunt's Bank, Manchester	do.
Stables, &c. Brighouse	do.	do.	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Forms of Tender, &c. Supplied by	Tenders to be delivered.
Parsonage House, Roundhay-road, Leeds		Bedford & Kilson, Archts. Greek-st. Chmbrs. Leeds	Nov. 22
*Supply and Delivery of Portland Cement	Hackney Vestry	S. Scorgie, Town Hall, Hackney, S.E.	do.
Granite Setts (3,300 tons)	Eccles (Lancs.) Corp.	A. C. Turley, C.E. Town Hall	Nov. 23
*Road-making, Tar-paving, &c.	Metropolitan Asylums Bd.	Metropolitan Asylums Bd. Norfolk House, Norfolk-st. Strand, W.C.	do.
Main Drainage, Tideswell	Bakewell R.D.C.	Sterling & Swann, Engrs. Town Hall, Chapel-en-le-Frith	Nov. 25
*Sinking a Well, &c.	Burnham-on-Crouch U.D.C.		do.
*Erection of Caretaker's Residence, &c.	E. Ham Sch. Bd.	R. L. Curtis, 120, London-wall, E.C.	Nov. 27
Shed, Walls, &c. Foyle-st. Market	Londonderry Corp.	F. G. Ferguson & Son, Archt. Guildhall, Derry	do.
Additions to School, Durham-rd.	Gateshead Sch. Bd.	Oliver, Leeson, & Wood, Archts. Mosley-st. Newcastle	Nov. 29
Bridge Works, Castle-rd.	Kidderminster T.C.	A. Comber, Boro. Engr. Town Hall, Kidderminster	do.
Light Railway Works, Mound to Dornoch (7½ miles)	Highland Ry. Co.	W. Roberts, Engr. Inverness	Nov. 30
Church, Lossiemouth, N.B.		J. H. Glennie, Lossiemouth	do.
Light Railway, Port Elizabeth, South Africa	Cape Govt.	Agent General, 112, Victoria-st. S.W.	do.
*Supply of Unclimable Fence	Wimbledon U.D.C.	C. H. Cooper, Council Offices, The Broadway, Wimbledon	Dec. 4
*Re-construction of a Bridge-Culvert, &c.	C.C. of Middlesex	H. T. Wakelam, Guildhall, Westminster	Dec. 5
*Erection of Police Station	County of I. of Wight	F. Newman, St. Thomas-st. Ryde, I. of Wight	do.
*Erecting New Infants' School	Bexley Sch. Bd.	J. Ladds, 7, Doughty-st. Mecklenburgh-sq. W.C.	do.
*Sewerage Works	Morecambe U.D.C.	Beesley, Son, & Nichols, 11, Victoria-st. Westminster, S.W.	Dec. 6
*Erection of Buildings	Parish of Liverpool	E. Kirby, 5, Cook-st. Liverpool	Dec. 11
Nurses' Home at Workhouse, Fishpool	Bolton Union	Bradshaw & Gass, Archts. 19, Silverwell-st. Bolton	Dec. 20
Electric Lighting Works, Rio	Municipality of Porto Alegre	Commercial Dept. Foreign Office, Whitehall, S.W.	Dec. 31
*Construction of Reservoir	Llanelly U.D.C.	J. H. Baines, 30, G. George-st. Westminster	Jan. 2
Railway Construction (200 miles) Ceylon	Colonial Office	Crown Agents, Downing-st. S.W.	Jan. 4
Baltic Sleepers	Tralee & Dingle Light Ry	Engineer's Office, Tralee	No date
Granite Setts, &c.	Manchester Corp.	Borough Surveyor, Town Hall	do.
Mill, Offices, &c. Dansom-lane, Hull	R. Canty	T. B. Thompson, Archt. 15, Parliament-st. Hull	do.
Villas, Ashton-under-Lyne		T. D. Lindley, Archt. Market-av. Ashton	do.
Schools, Scunthorpe, nr. Doncaster		J. M. Dossor, Archt. 2, Manor-st. Hull	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in.
*Assistant Surveyor	Boro. of Harrogate	2*l.* 2s. per week	Nov. 13
*Chief and Second Architectural Assistants	City of Coventry	150*l.* and 130*l.* per annum respectively	Nov. 15
*Clerk of Works	Metropolitan Asylum Bd.	5*l.* 5s. per week	do.
*Draughtsman	Boro. of Shoreditch	2*l.* 10s. per week	do.
*Clerk of Works	L.C.C.		Nov. 18
*Engineering Assistant	Newton Abbot U.D.C.		do.
*Road Inspector and Foreman	Boro. of Ipswich	2*l.* 10s. per week	Nov. 20
*Assistant	St. Mary, Islington	150*l.* per annum	Nov. 23
*Draughtsman	do.	71*l.* per annum	do.
*Clerk	Beckenham U.D.C.	100*l.* per annum	Nov. 24
*Road Foreman	Hornsey U.D.C.	2*l.* 5s. per week	Nov. 25

Those marked with an asterisk (*) are advertised in this Number. ***Competitions, p.*** iv. ***Contracts, pp.*** iv. vi. viii. x. & xix. ***Public Appointments, pp.*** xvii. & xix.

Darrick's Mead, 3 a. 0 r. 2 p., f. £360

By A. Preece (at Finsbury Park).

Crouch End.—13, 14, and 15, The Grove, u.t. 61½ yrs., g.r. 15*l.* 445

Hornsey.—6, 8, and 10, Boyton-rd., u.t. 69½ yrs., g.r. 13*l.* 10s. 495

November 1.—By Henry W. Roberts.

Coggeshall, Essex.—"The Stoneham-st. Brewery," with 30 hotels, public and beer houses, &c., attached, f. 49,250

By May & Rowden.

Edmonton.—Main-rd., Causey Ware Hall Building Estate, 11 a. 2 r. 39 p., f. 6,000

By P. W. Talbot & Co.

Marylebone.—16, Cleveland-st., u.t. 5¾ yrs., g.r. 1*l.*, e.r. 90*l.* 240

36, Upper-pk.-pl., u.t. 21 yrs., g.r. 10*l.*, r. 55*l.* .. 380

Harlesden.—191 and 193, High-st., u.t. 70 yrs., g.r. 5*l.* 1s. 720

Westbourne-pk.—20, Golborne-rd., u.t. 65 yrs., g.r. 5*l.*, r. 50*l.* 460

By Debenham, Tewson, & Co.

Leagrave, Beds.—Four enclosures of land, 69 a. 2 r. 10 p., f. 3,000

Five enclosures of land, 31 a. 2 r. 25 f. 1,375

Two enclosures of land, 6 a. 0 r. 19 p., f. 500

By St. Quintin & Son.

Ealing.—9 and 11, Warwick-rd., u.t. 69 yrs., g.r. 30*l.* 2s., r. 150*l.* 1,575

14, Grange Pk., u.t. 69 yrs., g.r. 14*l.*, r. 80*l.* 770

55 and 56, Grange Pk., u.t. 69 yrs., g.r. 15*l.*, r. 100*l.* 1,030

Paddington.—71, Marylands-rd., u.t. 63 yrs., g.r. 8*l.*, r. 55*l.* 540

Haymarket.—No. 53, u.t. 16½ yrs., g.r. 78*l.* 15s., r. 220*l.* 2,400

November 2.—By Chesterton & Sons.

Long Acre.—10 and 12, Upper St. Martin's-lane, u.t. 27 yrs., g.r. 75*l.*, r. 290*l.* 2,750

By Beadel, Wood, & Co.

Grays Thurrock, Essex.—High-st., &c., f.g.r.'s 35*l.*, reversion in 43 yrs. £1,445

New-rd., f.g.r.'s 24*l.*, reversion in 92 yrs. 640

New-rd., f.g.r.'s 49*l.* 15s., reversions in 72, 77, and 82 yrs. 1,450

Exmouth-rd., f.g.r.'s 75*l.*, reversions in 76, 78, and 82 yrs. 2,090

Sherfield-rd., f.g.r.'s 18*l.* and a peppercorn, reversions in 73, 76, and 77 yrs. 535

Argent-st., &c., f.g.r.'s 220*l.* 10s., reversions varying from 41 to 93 yrs. 6,690

Bridge-rd., f.g.r.'s 56*l.* 16s., reversions from 67 to 92 yrs. 1,610

Richmond-rd., &c., f.g.r.'s 171*l.* 6s., reversions from 83 to 92 yrs. 4,425

William-st., f.g.r.'s 121*l.* 15s., reversions in 82, 83, and 84 yrs. 3,100

Grove-rd., &c., f.g.r.'s 110*l.* 10s., reversions in 82 and 83 yrs. 2,810

Glen-rd., &c., f.g.r.'s 124*l.*, 15s., reversions in 82 and 83 yrs. 3,185

By Pratt & Marsland.

Old Kent-rd.—1, Hyndman-st., u.t. 45 yrs., g.r. 4*l.* 205

Anerley.—7, Weighton-rd., u.t. 67 yrs., g.r. 15*l.*, e.r. 60*l.* 205

By Perkins & Cæsar.

Dockhead.—1, 2, and 3, Farthing-alley, u.t. 63½ yrs., g.r. 15*l.* 575

Southwark.—33 to 45 (odd), Lafone-st., u.t. 96 yrs., g.r. 56*l.* 4,000

Sydenham.—5 to 15 (odd), West-ter., u.t. 62 yrs., g.r. 30*l.* 1,140

By Stimson & Sons.

Chelsea.—67, 67A, and 69, King's-rd., f., r., 360*l.* 8,060

2, Smith-st., f., r. 60*l.* 1,260

Shepherd's Bush.—77 to 85 (odd), Uxbridge-rd., f., r. 315*l.* 7,990

107, Devonport-rd., f., r. 36*l.* £620

Devonport-rd., a range of stabling and yard, f., e.r. 67*l.* 850

Camberwell.—Pitman-st., the "Coach and Horses" b.-h., u.t. 66 yrs., g.r. 6*l.*, r. 42*l.* 820

Greenwich.—Church-st., the "Masons' Arms" b.-h., f., r. 40*l.* 750

By Daniel Watney & Sons.

City of London.—Finsbury-pavement, &c., the letting of a building site for 80 yrs., area 16 750 ft., at per annum 4,700

By Hooker & Webb (at Croydon).

Croydon.—86 to 92 (even), Churchill-rd., f. 1,200

18, Handcroft-rd., u.t. 41 yrs., g.r. 3*l.*, r. 35*l.* .. 315

1 and 3, The Crescent, u.t. 90 yrs., g.r. 5*l.* 625

November 3.—By W. A. Blakemore.

Pimlico.—3 and 5, Buckingham Palace-rd., u.t. 12 yrs., g.r. 75*l.*, r. 00*l.* 1,600

71, Sutherland-st., u.t. 34 yrs., g.r. 10*l.* 10s., r. 58*l.* 530

By Drivers (Holloway).

Limehouse.—33 to 45 (odd), Cayley-st., c. 1,100

42, 44, and 46, Aston-st., f. and c. 665

By Alfred Squire.

South Lambeth.—92, South Lambeth-rd., and 9, Wyvil-st., u.t. 44 yrs., g.r. 8*l.* 10s., r. 70*l.* 12s. 700

Priory-rd., f.g.r. 7*l.*, reversion in 51 yrs. 200

By Jones, Lang, & Co.

City of London.—64, Leadenhall-st., area 2,285 ft., the letting on a building lease for 80 yrs., at per annum 355

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.

PRICES CURRENT OF MATERIALS:

WOOD.*

Per Petersburg standard hundred.

	£	s.	d.	£	s.	d.
White Sea: first yellow deals	17	15	0	18	15	0
Second do.	14	0	0	15	10	0
Third do.	12	5	0	13	10	0
Battens, 40s., 30s., and 15s. less respectively.						
Petersburg: first yellow deals	14	10	0	17	0	0
Second do.	11	10	0	13	0	0
Battens, 30s. and 20s. less respectively.						
Petersburg, white deals	10	10	0	12	10	0
Do. white battens	9	0	0	10	0	0
Riga, white deals	9	0	0	10	0	0
Swedish mixed yellow deals	14	0	0	17	10	0
Third do.	13	0	0	15	10	0
Fourth do.	11	10	0	12	10	0
Fifth do.	10	10	0	11	10	0
Battens, 30s., 20s., and 10s. less respectively.						
Whitewood, 10 to 20 per cent. less.						
Finnish unsorted yellow deals	10	10	0	11	0	0
Battens, 10s. and 5s. less respectively.						
Whitewood, 5 to 10 per cent. less.						
Norwegian second yellow battens	8	0	0	8	10	0
Third do.	7	10	0	8	0	0
Fourth do.	7	0	0	7	10	0
Whitewood, 10s. less.						
Danzig, Crown Deck deals, per 40 ft. 3 in.	0	15	0	1	5	0
Brack	0	12	0	1	0	0
St. Lawrence Pine deals, &c., per P.S.H.:—						
1st, Bright and Dry, regular sizes	20	0	0	27	0	0
" " oddments	13	0	0	20	0	0
2nd " regular sizes	15	0	0	17	10	0
" " oddments	10	0	0	14	0	0
3rd " regular sizes	9	0	0	11	0	0
" " oddments	7	10	0	9	10	0
4th " regular sizes	8	0	0	9	0	0
" " oddments	7	0	0	8	10	0
St. Lawrence Spruce deals, &c.						
First, regular sizes	9	0	0	11	10	0
Second "	8	10	0	9	0	0
Third "	8	0	0	8	10	0
Fourth "	7	10	0	8	0	0
Oddments and battens at 20s., 10s., 7s. 6d., and 5s. less respectively.						
New Brunswick Spruce deals, &c.	7	15	0	8	10	0
Oddments, battens, and fourths	7	0	0	8	0	0
United States pitch pine planks and boards	9	0	0	12	10	0
Prepared Boards, per square						
1½ by 6½ and 7 in. 1st yellow		10	0		15	0
" " 2nd "		9	0		11	0
1 by 6½ and 7 in. 1st "		9	6		11	0
" " " white		7	6		9	6
" " 2nd yellow		7	6		9	6
" " " white		6	0		7	6
¾ by 6½ & 7 in. 1st & 2nd yellow		7	6		8	6
" " " white		7	0		8	0
¾ by 6½ and 7 in. 1st yellow and white (grooved, tongued, and beaded)		7	6		8	0
¾ by 6½ and 7 in. 2nd yellow and white (ditto)		7	0		7	6
¾ by 6½ and 7 in. 1st yellow and white (ditto)		5	6		6	6
¾ by 6½ and 7 in. 2nd yellow and white (ditto)		4	6		5	6
Narrower widths at 10 per cent. less. 3rd quality at 15 per cent. less than 2nd.						
Danzig and Memel Fir Timber— per load						
Best middling	3	15	0	4	0	0
Good middling and Second	3	5	0	3	10	0
Common middling	3	0	0	3	5	0
Undersized	3	0	0	3	5	0
Swedish and Norwegian Balks	2	10	0	2	15	0
Baltic Oak Timber—						
Danzig and Stettin—Large	3	5	0	4	5	0
Small	2	10	0	3	5	0
Quebec Timber per load						
Yellow Pine	5	5	0	7	0	0
Oak	4	10	0	6	10	0
Elm	5	0	0	5	10	0
Ash	4	5	0	5	0	0
Birch	2	15	0	4	15	0
New Brunswick, &c., Birch	2	10	0	3	0	0
American Pitch Pine Timber	3	17	6	4	10	0
Wainscot, per log, 18 cubic ft.,— Crown (Eng. & Dutch) / Brack — nominal	4 / 3	5 / 10	0 / 0	5 / 4	15 / 10	0 / 0
Lathwood, per cubic fathom—						
Petersburg	4	0	0	6	10	0
Riga and Danzig	4	10	0	5	10	0
Norway Poles, per ft. run	0	0	1	0	0	1½
Oak Staves, per mille full size pipe						
Memel, Crown	210	0	0	220	0	0
Brack	180	0	0	190	0	0
Danzig	165	0	0	175	0	0
Bosnia, single Barrel (nominal)	28	0	0	30	0	0
United States, Pipe	35	0	0	42	10	0
Hogshead, extra heavy and double extra	27	10	0	32	10	0
Indian Teake per load	11	0	0	16	10	0
British Guiana Greenheart	0	0	0	8	0	0
Mahogany, per foot superficial—						
Honduras, cargo average	0	0	5	0	0	6½
Nicaragua, do.	0	0	4½	0	0	5½
Tabasco, do.	0	0	4½	0	0	6½
Mexican, do.	0	0	4	0	0	4½
Panama, do.	0	0	3	0	0	4
African, do.	0	0	3½	0	0	5½
Cuba, do.	0	0	6	0	0	8
St. Domingo, do.	0	0	5	0	0	7½
Do. Curls (good to prime)	0	0	9	0	1	3
Walnut, American (logs)	0	2	3	0	4	6
Do. do. (planks and boards)	0	2	0	0	7	6
Italian, per foot superficial	0	0	3	0	0	7½
Black Sea, per ton	6	0	0	12	0	0

* The prices named are for the wood as imported and landed in the docks. Ten per cent., approximately, should be added in order to arrive at the current trade prices.

PRICES CURRENT—*continued.*

	£	s.	d.	£	s.	d.
Satin Walnut (logs) per foot cube	0	1	0	0	1	3
" (planks and boards)	0	2	0	0	2	9
Sequoia (Californian redwood), per foot cube	0	1	9	0	2	0
Whitewood, American (logs)	0	1	3	0	1	6
" " (planks and boards)	0	1	6	0	2	9
Quartered oak " " "	0	2	3	0	4	0
Kauri pine (logs)	0	1	9	0	2	0
" " (planks)	0	2	3	0	2	9
Jarrah (planks)	0	2	0	0	2	3
Lancewood spars each, fresh and large	0	5	0	0	8	0
Lancewood spars, ordinary to fair	0	4	0	0	5	0
Degame spars	0	8	0	0	10	0

METALS.

Iron—Pig, in Scotland ton	3	11	3	0	0	0
Bar, Welsh, in London	9	0	0	9	15	0
Do. do. at works in Wales	8	10	0	9	0	0
Do. Staffordshire, in London	9	15	0	11	15	0
Copper—British cake and ingot	79	0	0	79	10	0
Best selected	80	0	0	81	0	0
Sheets, strong	84	0	0	85	0	0
Chili bars	74	7	6	0	0	0
Yellow Metal lb.		7d.			7½d.	
Lead—Pig						
Spanish ton	17	5	0	0	0	0
English Com. Brands	17	10	0	0	0	0
Sheet, English, 6 lbs. per sq. ft. and upwards	19	5	0	0	0	0
Pipe	19	15	0	0	0	0
Zinc—English sheet ton	26	0	0	0	0	0
Vieille Montagne	27	0	0	0	0	0
Spelter	21	5	0	21	7	6
Tin—Straits	138	15	0	0	0	0
Australian	139	0	0	139	10	0
English Ingots	142	0	0	143	0	0
Banca	141	0	0	0	0	0
Billiton	140	10	0	0	0	0

OILS.

Linseed ton	22	10	0	22	15	0
Cocoanut, Cochin	29	15	0	0	0	0
Do. Ceylon	25	15	0	0	0	0
Palm, Lagos	27	10	0	0	0	0
Rapeseed, English, pale	25	15	0	0	0	0
Do. Brown	24	10	0	0	0	0
Cottonseed ref.	19	0	0	20	0	0
Oleine	17	5	0	19	5	0
Lubricating U.S.	0	7	6	0	9	6
Do. Black	0	6	6	0	8	3
Tar—Stockholm barrel	1	6	6	0	0	0
Archangel	1	0	0	0	0	0
Turpentine	36	0	0	0	0	0

TO CORRESPONDENTS.

S. S. (Amounts should have been stated). B. P. (1. Below our limit, 2. Amounts should have been stated).

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TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is given, nor any list in which the lowest Tender is under £100, unless in some exceptional cases and for special reasons.]

*** Denotes *accepted*. † Denotes *provisionally accepted*.**

ALTOFTS (Yorks).—For kerbing and flagging part of Church-road, for the Urban District Council. Mr. W. Wilkinson, Surveyor, Council Offices, Altofts. Quantities by Surveyor:—

J. Bramham, Altofts* £222 16

CHEARSLEY (Bucks).—For alterations and additions to Chearsley Board School, for the Chearsley School Board. Mr. Guest Luckett, architect, Aylesbury:

Sherwin	£503 12	Blane	£359 0
B. Holland	404 0	Crook & Son, Waddesdon*	325 0
J. Holland	362 10		

CHELMSFORD.—For the erection of school-room and offices, Hall-street. Mr. Charles Pertwee, architect, Bank-chambers, Chelmsford:—

E. West	£400 0	Summis & Son, Chelmsford*	£323 10
J. J. Taylor	354 0		
C. E. Ely	347 0		

CHESTERFIELD.—For the erection of new Central Board Schools, Ashgate-road, Chesterfield, for the Chesterfield School Board. Messrs. Tiltman & Jackson, architects, London & Chesterfield:—

James Fidler	£18,100 0	Moss & Son, Ltd.	£16,095 0
Robert Peck	17,700 0	John Wright	15,927 10
Longden & Son	17,650 0	Isaac Margereson	15,815 0
A. G. Bell	16,468 0	William Forrest	15,508 0
Kellet & Son, Leicester*	16,100 0		

CLIFTON (Beds).—For the erection of church-room, for the Rector and Churchwardens. Mr. Geo. Horn, surveyor, Wren Park, Shefford, Beds:—

Geo. Wheatley, Shefford* £365

CLOWNE (Derbyshire).—For the erection of sixty houses. Mr. F. Cook, C.E., 22, Leeming-street, Mansfield:—

J. F. Price	£12,700 0 0	Brassington & Bingham	£10,335 5 0
A. Eastwood	12,461 3 6	C. Houldsworth	10,113 0 0
G. Boot	12,000 0 0	Cresswell & Sewell	10,067 15 11
A. G. Bell	11,736 0 0	F. H. & J. W. Moore	9,900 0 0
E. Levick	11,344 5 10	G. England	9,900 0 0
G. Haynes	11,225 0 0	J. Wignell	9,300 0 0
W. Thomason	11,160 0 0	W. B. Wass, Sutton-in-Ashfield*	9,009 0 0
G. R. Hall	11,102 7 6		
F. Lee	11,100 0 0		
C. G. Percival	10,800 0 0		
H. Oakey	10,800 0 0		
W. Savage	10,550 0 0		
C. E. Hall	10,500 0 0		

DOWLAIS (S. Wales).—For the addition of caretaker's rooms to club for the employees of the Dowlais Iron Company, for the Rt. Hon. Lord Wimborne. Mr. R. Owen Allsop, architect, 37, Norfolk-street, Strand, London:—

John Linton, Newport, Mon.* £127

DOWLAIS (S. Wales).—For foundations of baths, for the Rt. Hon. Lord Wimborne. Mr. R. Owen Allsop, architect:—

Samuel Evans	£126 3 6	John Linton, Newport, Mon.*	£90 0 0
Evan Jones	116 0 0		

DOWLAIS (S. Wales).—For the erection of slipper baths and penny automatic shower baths, for the Rt. Hon. Lord Wimborne. Mr. R. Owen Allsop, architect:—

E. Jones	£1,975
J. Linton, Newport, Mon.*	1,350

EARL'S BARTON (Northants).—For additions to club and institute. Messrs. Mosley & Anderson, architects, Fish-street, Northampton:—

H. White	£840 0	Wilford & Judkin	£590 0
Wilson & Alright	700 14	Johnson, Earl's Barton, Northants*	570 0
F. Harper	675 0		
J. C. Sharman	663 17	S. Knight	539 0

EAST HAM.—For the erection of a Congregational Church at East Ham. Messrs. J. D. & S. J. Mould, architects, 52, Queen Victoria-street, E.C.:—

J. Shelbourne & Co., 70, Fenchurch-st. £4,966 6 6

FRINTON-ON-SEA.—For the erection of a detached villa on the Esplanade, for Mrs. Franklin. Messrs. Homer & Co., architects, Frinton-on-Sea:—

E. West	£1,348	F. B. Pitcher	£1,215
W. Gladwell	1,295	G. Abbott*	1,174
H. J. Linzell	1,269		

FRINTON-ON-SEA.—For the erection of a villa for Mr. F. Saunderson. Messrs. Homer & Co., architects, Frinton-on-Sea:—

F. B. Pitcher* £700

FRINTON-ON-SEA.—For the erection of a villa for Mr. A. Patterson. Messrs. Homer & Co., architects, Frinton-on-Sea. Quantities by Mr. G. Silvester, 46, Strand, W.C.:—

G. Abbott	£840	E. West	£783
F. B. Pitcher	835	H. J. Linzell	765

FRINTON-ON-SEA.—For the erection of a villa in Fourth-avenue, for Mr. E. Spiegel. Messrs. Homer & Co., architects, Frinton-on-Sea:—

Dupont	£1,987	Linzell	£1,757
West	1,823	Pitcher	1,687

GILLINGHAM (Kent).—For the execution of paving works, Dockyard Extension-road, for the Urban District Council;—

Wilkinson & Co., Ltd., London, S.W. ..£248 12

[The Council are going to do the work themselves.]

HASTINGS.—For the construction of covered service reservoir and filter-house, West-hill, St. Leonards, for the Corporation. Mr. P. H. Palmer, C.E., Town Hall, Hastings:—

P. Jenkins, St. Leonards-on-Sea* £4,799

ILFORD.—For the erection of a Congregational Church, at Ilford. Messrs. J. D. & S. J. Mould, architects, 52, Queen Victoria-street, E.C.:—

J. Shelbourne & Co., 70, Fenchurch-street .. £8,772

[Lowest tender.]

KEIGHLEY.—For rebuilding the "Albert" Hotel, for Messrs. S. Taylor & Co. Mr. John Haggas, architect, North-street, Keighley:—

Masonry.—J. Pearson, Keighley.....
Joinery.—W. Steel, Keighley .....
Slating.—W. Thornton, Bingley .....
Plastering and Concrete.—H. Emmott, Keighley ..... } £2,200‡
Plumbing.—J. Harrison, Keighley.....
Painting.—R. Lonsdale, Keighley .....

‡ Exclusive of bar fittings, seating, &c.

KING'S LYNN.—For alterations to workhouse, Gayton, for the Freebridge Lynn Union Guardians. Mr. H. T. Tilson, architect, Railway-road, King's Lynn:—

R. Spragg	£259 10	Read & Wildbur, Lynn*	£246 10

LEEDS.—For the erection of an accumulator house, Kirkstall-road, for the Corporation. Mr. Thos. Hewson, City Engineer, Leeds:—

H. Wood, Columbia-street* £388

LONDON.—For making-up and paving Querrin-street, for the Fulham Vestry. Mr. Chas. Botterill, Surveyor, Town Hall, Walham Green, S.W.:—

Carriageway.

J. Wilson	£475	J. Mears	£465
Nowell & Co.	473	H. J. Greenham	457
Wimpey & Co.	466	Parry & Co.	450

Footways.

Nowell & Co., York Stone	£190
Victoria Stone Company, Victoria Stone	138
Imperial Stone Company, Imperial Stone	99

See also next page.

LONDON.—For excavating and carting at the site of the new baths, Prince of Wales'-road, Kentish Town. Mr. T. W. Aldwinckle, architect :—

H. T. Greenham	£2,495 0	J. Abrahams	£1,940 0
R. Ballard, Ltd.	2,472 10	Snowdon, Hubbard & Co., Ltd.	£1,924 0
J. Mears	2,457 0	W. Walker*	1,895 0
H. Boyer	2,015 10		
E. H. Jackson	1,950 0		

LONDON. — For alterations to business premises, electric light, &c., 62, Westow Hill, Norwood, S.W. Messrs. Morley & Letts, architects, 185, Earl's Court-road, S.W. :—

Smith & Son	£847	James Whitaker, Earl's Court-road*	£825

LONDON.—For decorative and electric-light works, at Nos. 38 and 35, Nevern-square. Messrs. Morley & Letts, architects, 185, Earl's Court-road, S.W. :—

James Whitaker, Earl's Court* £304 7

MANCHESTER.—For erecting working men's homes, Charter-street, Manchester, for Mr. W. J. Crossley. Messrs. Maxwell & Tuke, architects, Manchester :—

James Byrom	£4,891	Young, Tinker, & Young	£4,375
Neill & Sons	4,730		
Peters & Sons	4,480	Bullivant & Sons, Manchester*	4,195
Southern & Sons	4,445		

NORDEN (Lancs). — For kerbing, flagging, &c., Clapgate-road, for the Urban District Council. Mr. J. W. Sunderland, surveyor, Church View, Norden. Quantities by surveyor :—

M. Cummins	£183 0	T. Ashworth & Sons, Norden*	£181 7

* Accepted for kerbing and flagging only, 63*l.* 7*s.*

NORTH SHIELDS.—For the erection of padded rooms, &c., at the workhouse, for the Tynemouth Union Guardians. Mr. Henry Gibson, architect, Saville-street, North Shields :—

W. A. Fishburn & Co., North Shields* £795

Padding.

Pocock Bros., 235, Southwark Bridge-rd., S.E. £467

PONTYPOOL.—For the erection of two houses, and shop premises, Windsor-street, Griffithstown, for Mr. F. E. Jenkins. Mr. B. J. Francis, architect, Abergavenny :—

F. C. Parfitt, Newport £992 10

RISCA (Mon.).—For alterations and additions to the Waunfawr Board Schools, for the Risca School Board. Mr. Geo. Rosser, architect, Pontymister, Mon.:—

Saxon Bros.	£138 15	Jos. Lewis, Pontymister, Mon.*	£120 0
John Pritchard	130 0		

ROMFORD.—For the erection of isolation wards, administrative block, &c., near Rush Green, for the Joint Hospital Board. Mr. Frank Whitmore, architect, 17, Duke-street, Chelmsford :—

Stephens, Bastow, & Co.	£8,285	Hammond & Sons	£7,391
Outhwaite & Son	8,134	Davis & Leaney	7,383
Chessum & Son	8,125	E. West	7,220
Wilkinson Bros.	7,458	Coulson & Lofts, Cambridge*	6,810
Silas Parmenter	7,424		

ROWLANDS GILL (Durham).—For proposed villa residence, Rowlands Gill, for Mr. J. C. Lawson. Messrs. Liddle & Browne, architects, Newcastle-on-Tyne :—

T. Dorin	£1,012 5 8	Davison & Bolam	£882 18 4
Reed & Co.	983 1 7	Reay & Son	882 0 0
G. Bailes	910 9 0	A. & R. Davis, Burnopfield*	850 0 0
M. A. Armstrong	887 7 0		

WALSALL.—For additions, &c., to No. 1 Boys' School, Rushall, for the School Board. Messrs. Hickton & Farmer, architects, Bridge-street, Walsall. Quantities by the architects :—

Wm. Wistance	£713	R. Harris, Shelfield*	£650
M. A. Lynex	693		

WALTHAMSTOW.—For the erection of school buildings, Blackhorse-road, for the School Board. Mr. W. A. Longmore, architect, Bridge-chambers, Hoe-street, Walthamstow :—

Kiddle & Sons	£24,889	Evans	£20,569
Lawrence & Sons	22,163	Gregar & Sons, Stratford*	19,883
Carter	21,049		

[Architect's estimate, £19,700.]

WATFORD.—For the supply of granite (800 tons), for the Urban District Council :—

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Whitwick Granite Company	10	6
A. & F. Mahuelle	10	3
Griff Granite Company	9	9
Midland Quarry Company	9	9
Anchor Granite Company, London†	9	11
Exors. of W. A. Judkins, Nuneaton†	10	3

† Accepted for 400 tons each.

WESTBURY-ON-TRYM. — For the execution of sewerage works, Henbury Hill, for the Barton Regis Rural District Council. Mr. A. P. I. Cotterell, C.E., 7, Baldwin-street, Bristol :—

M. Lovell	£725 11 7	Thomas & Webb	£498 0 0
H. Weldon	600 0 0	J. Slade	479 18 0
Williams & Ball	595 0 0	Dare & Co., Black Boy Hill*	457 0 0
Smith & Son	563 10 0		
W. & J. Bennett	503 0 0		

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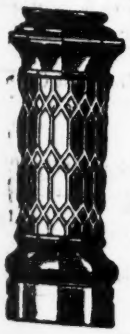

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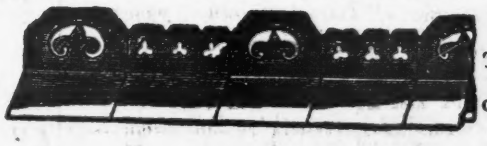

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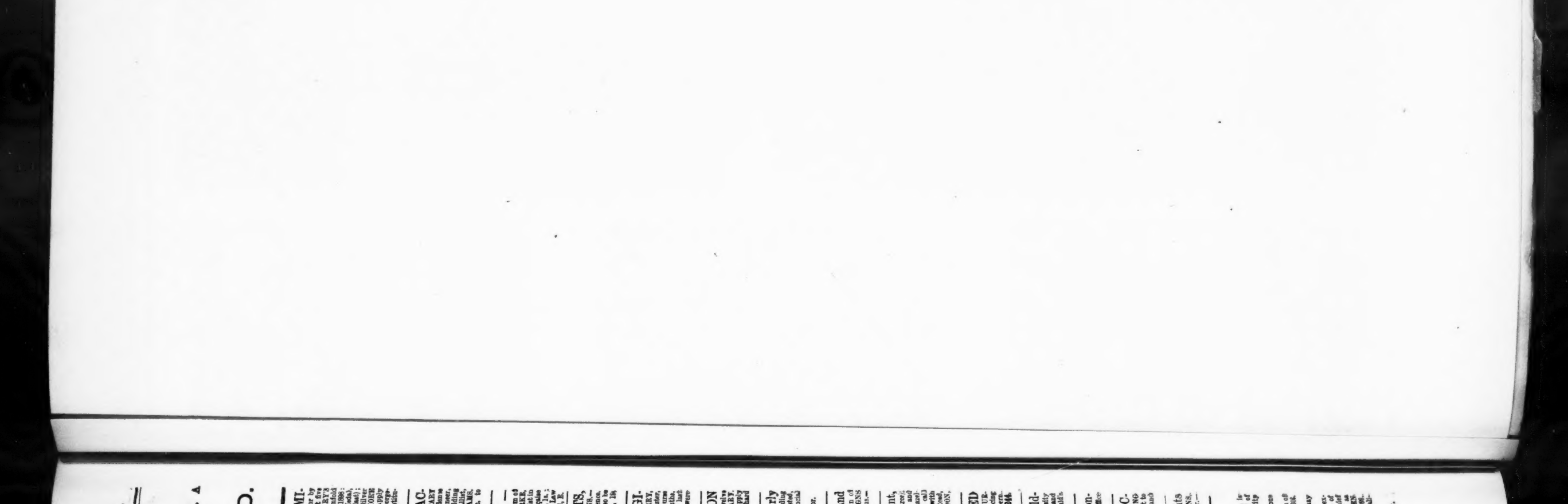

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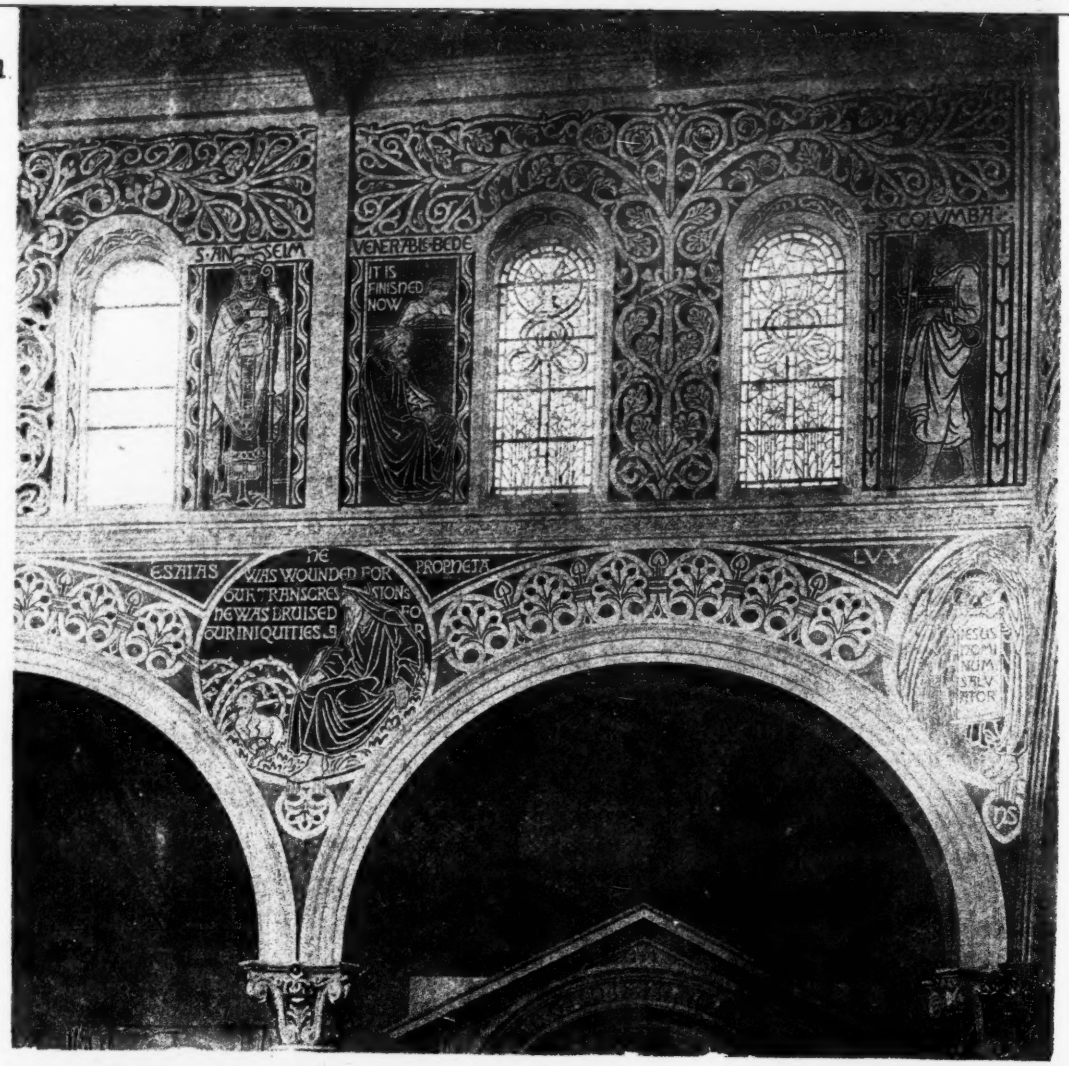

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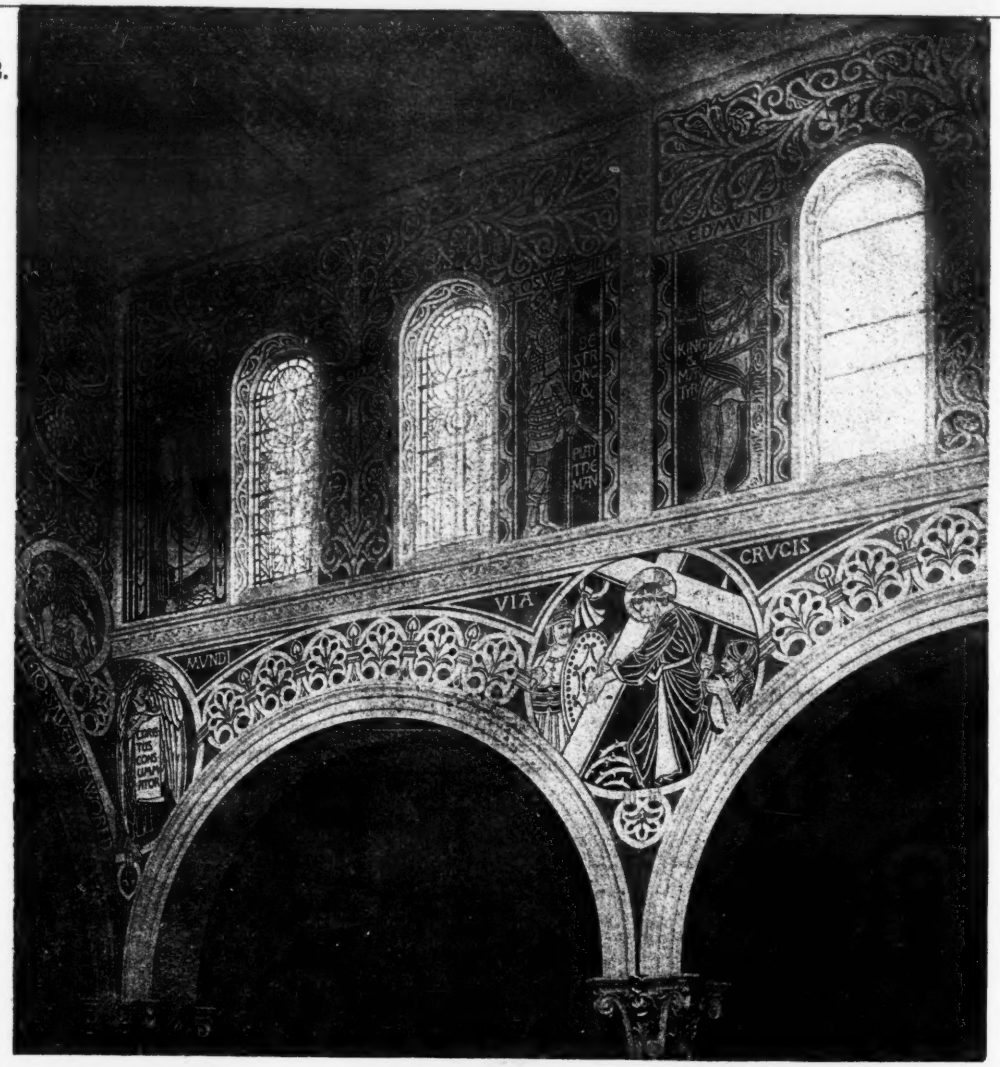

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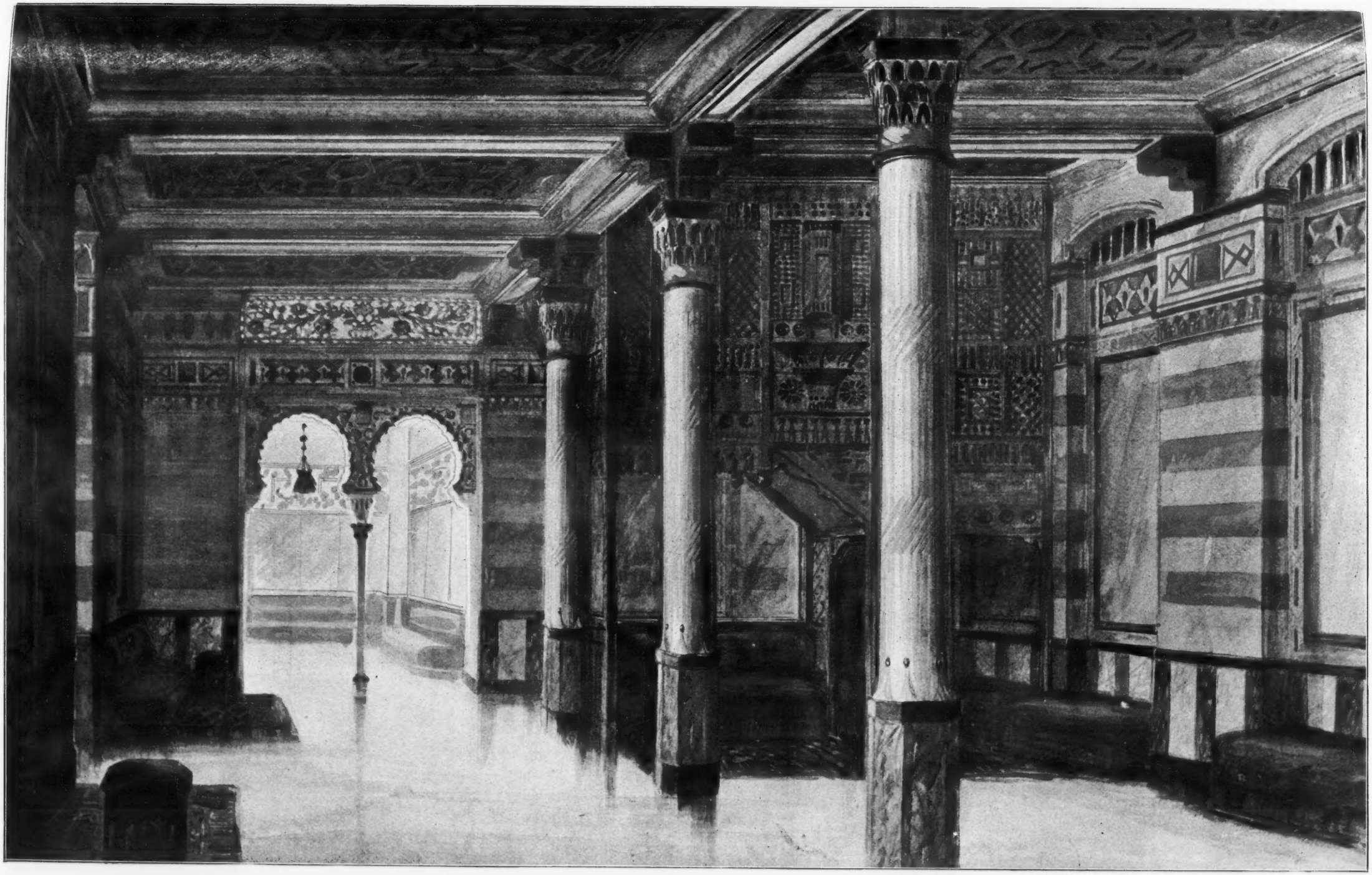

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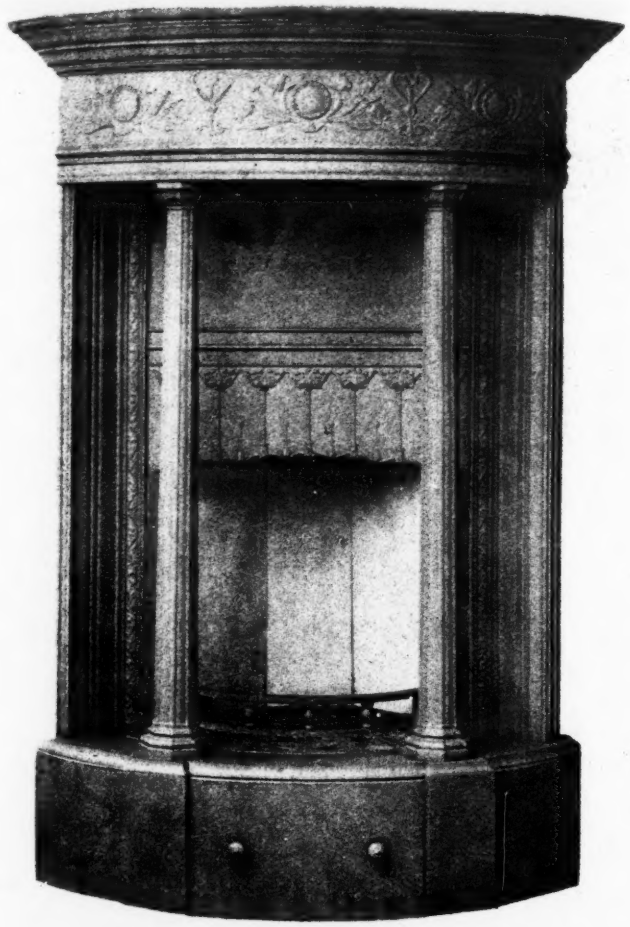

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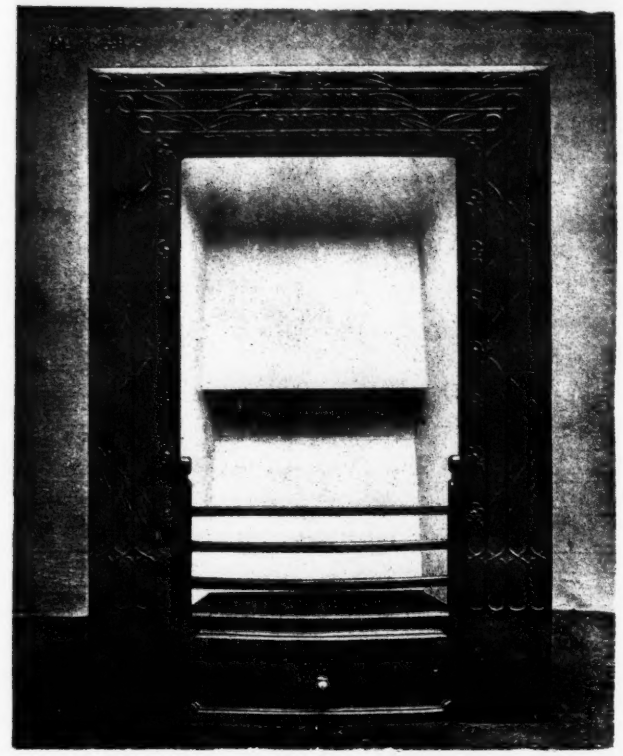

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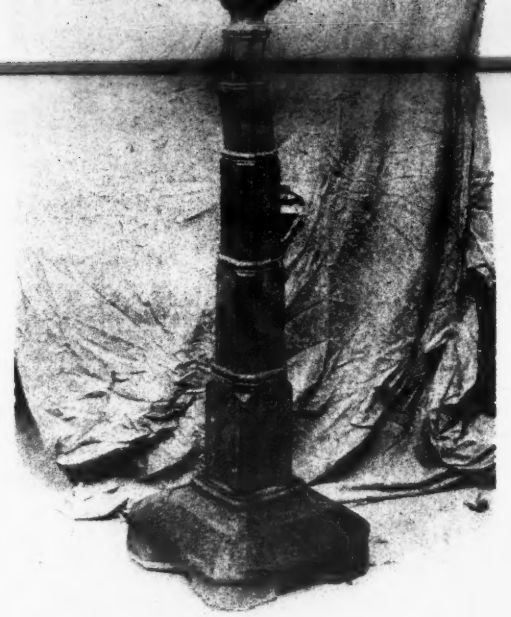

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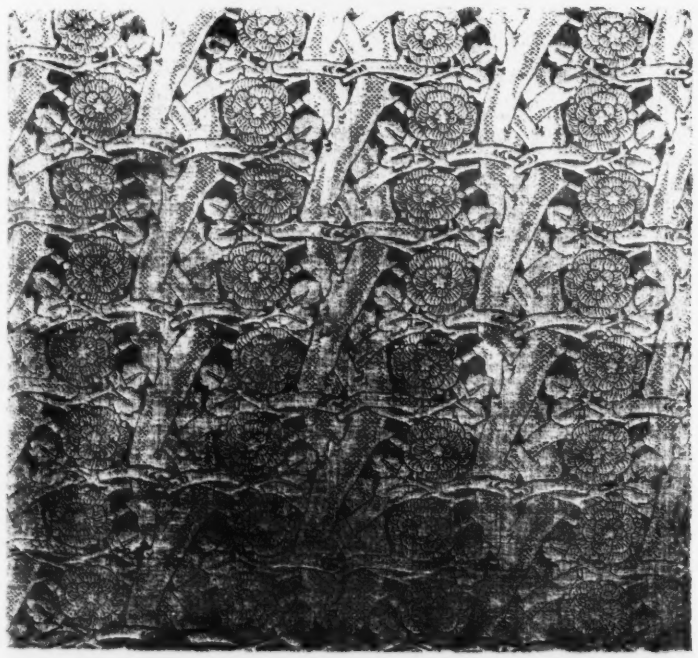

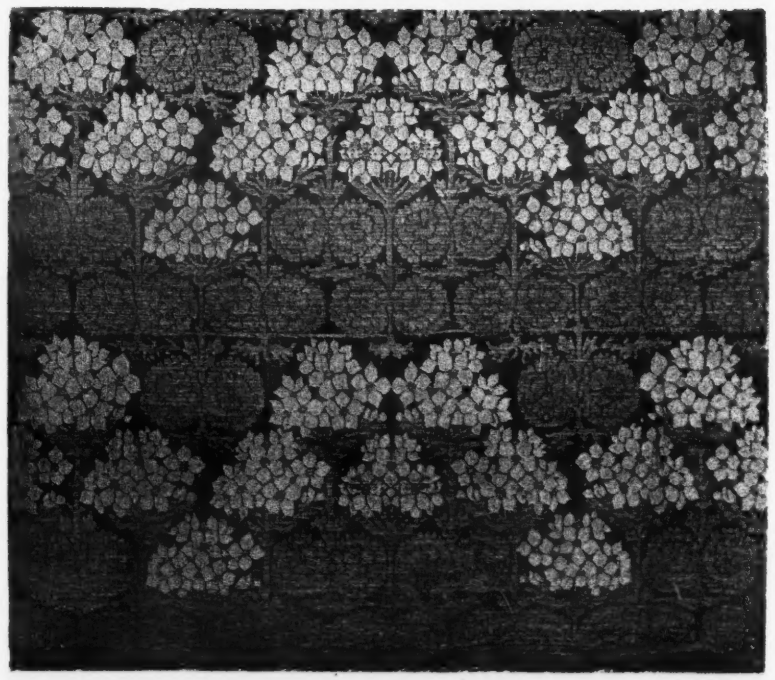

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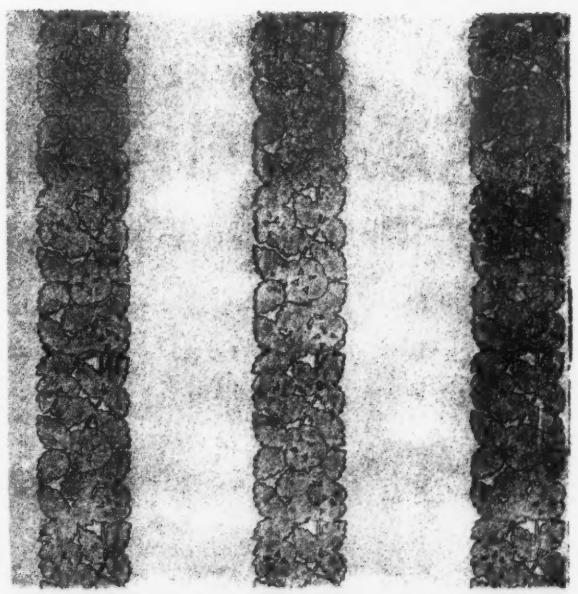

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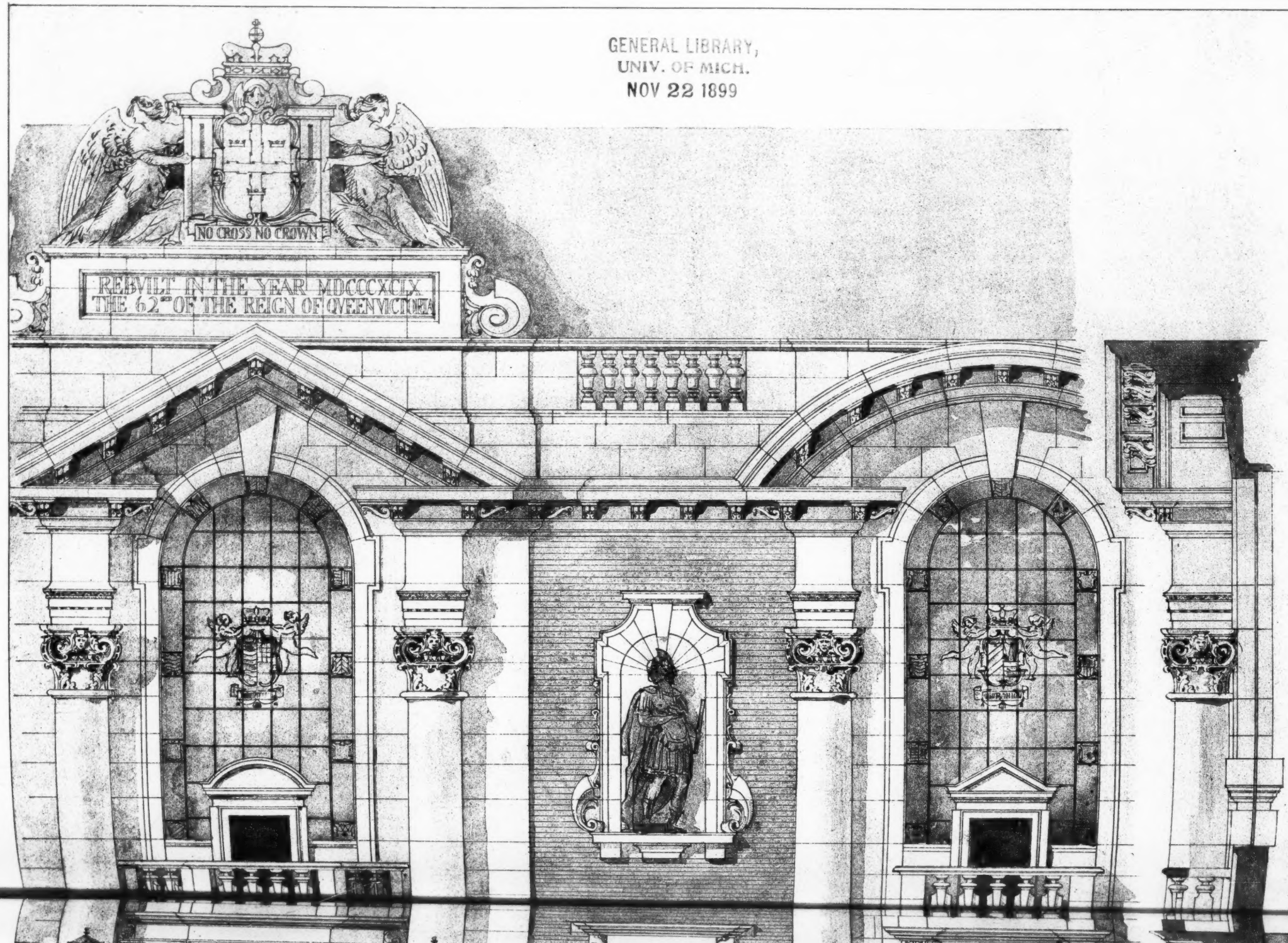

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